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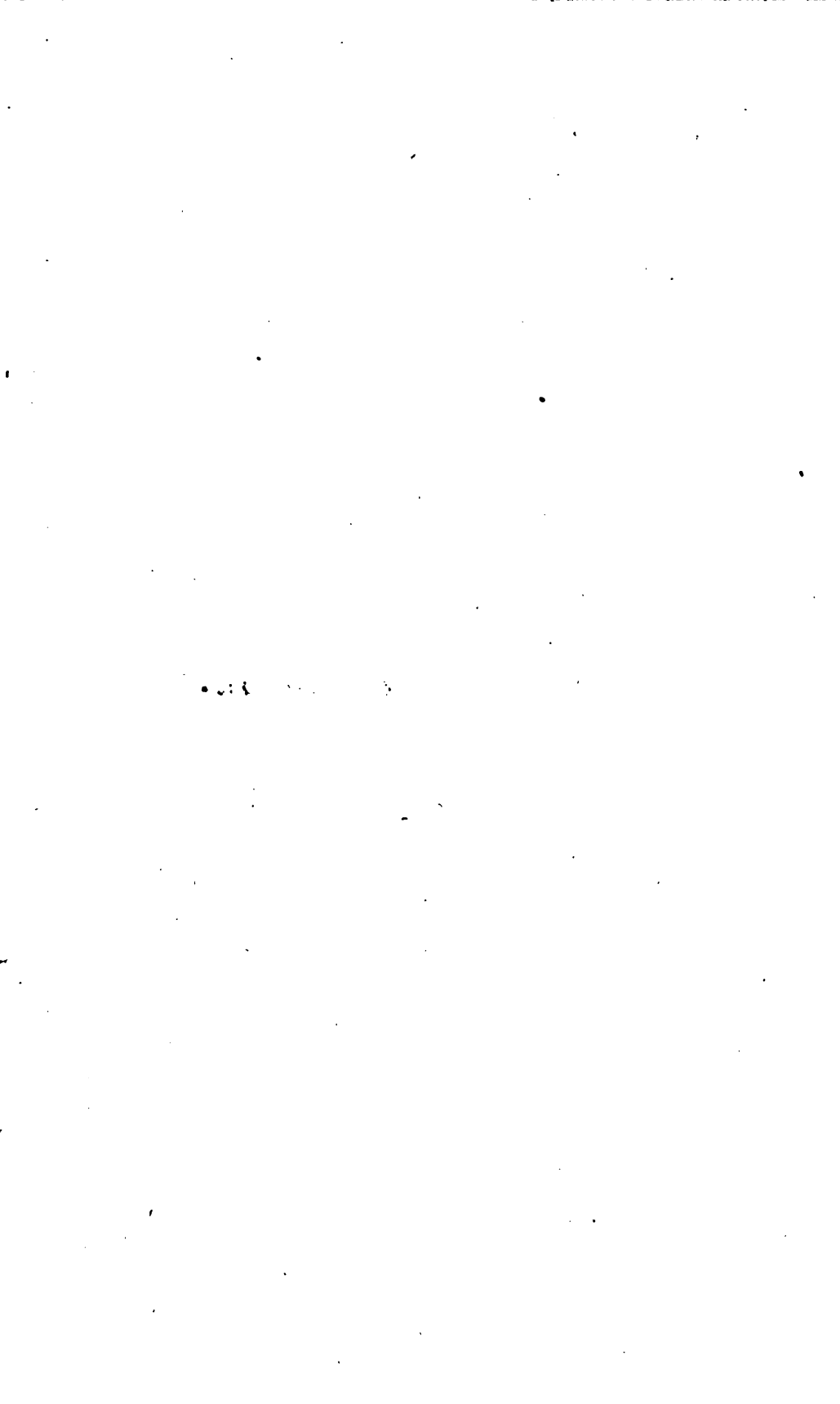
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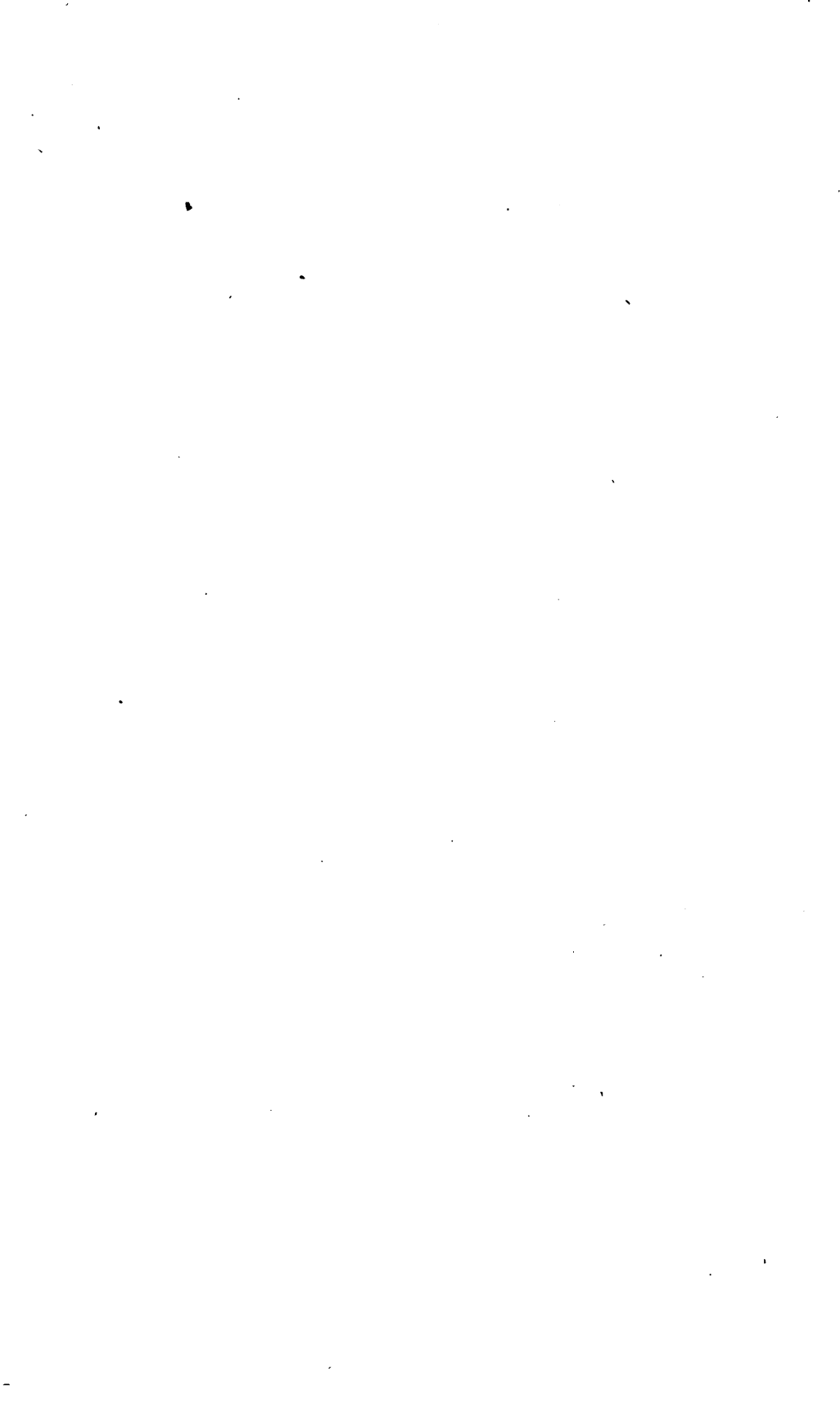
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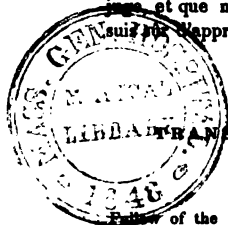
ANATOMICAL,
PATHOLOGICAL AND THERAPEUTIC
RESEARCHES
UPON THE DISEASE KNOWN UNDER THE NAME
OF
GASTRO-ENTERITE,
PUTRID, ADYNAMIC, ATAXIC, OR TYPHOID FEVER, ETC.,
COMPARED WITH THE MOST COMMON ACUTE DISEASES.

By P. CH. A. LOUIS,

President for Life of the Society for Medical Observation at Paris; Doctor of Medicine
of the Faculties of Paris and St. Petersburg; Member of the Royal Academy
of Medicine; Corresponding Member of the Imperial Medico-Chirurgical
Academy of St. Petersburg, and of Marseilles.

"Je sais que la vérité est dans les choses, et non dans mon esprit qui les
juge, et que moins je mets du mien dans les jugements que j'en porte, plus je
suis près d'approcher de la vérité."

ÉMILÉ.



TRANSLATED FROM THE ORIGINAL FRENCH

By HENRY I. BOWDITCH, M. D.

Fellow of the Massachusetts Medical Society and Member of the Society for Medical
Observation at Paris.

VOL. I.

BOSTON ISAAC R. BUTTS,
1836.

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TO
M. CHOMEL,
CLINICAL PROFESSOR OF THE PARIS MEDICAL SCHOOL,
HONORARY PHYSICIAN OF THE HOSPITALS,
TITULAR MEMBER OF THE
ROYAL ACADEMY OF MEDICINE, ETC.
THIS WORK
IS DEDICATED BY THE
AUTHOR.

PREFACE BY THE TRANSLATOR.

THE reader will find a general summary of these Researches in the advertisement given by the Author, therefore I need say nothing in reference to the plan of the work itself. Of the numerical method pursued in the investigation of the Typhus Fever in Paris, this work alone is a sufficient eulogium, and will satisfy every candid mind that glorious results will be produced in furtherance of the cause of Medical Truth, when every work shall be written in the same rigorously inductive method as that pursued by the Physician of La Pitié. I have not thought it important to make notes to the work, any farther than was absolutely necessary to enable the reader to understand the Author, and in the Appendix will be found an explanation of most of those prescriptions which are obscure. I have tried always to translate as literally as possible, and at the same time to avoid French idioms, but the critical reader will, doubtless, find many of these blemishes in the course of the work; he will also find inelegant diction; perhaps, at times, absolute errors of typography. These faults when they appeared to make the meaning at all obscure or incorrect have been noticed in the Appendix; for the mere inelegancies, I trust to the kindness of the reader that he will pardon them. But, although I think I have translated truly the meaning of the Author in every respect, I may, in some parts, have given inaccurate ideas of his results; if this be

the case I crave no indulgence, and the critic will confer a favor upon me by fully proving my error. I would in this place return my sincere thanks to Dr. Rogers of Boston, and to Dr. Valentine of Charlestown, who have been kind enough to examine the proofs, whereby many errors have been prevented.

At a future time I hope to be able to give some account of Typhus as it is seen in our own country ; but, until I have collected cases and have analyzed them, of course I can have no fixed opinion upon the subject ; but one circumstance I will state, viz., I have, as yet, seen no reason for thinking that the views taken by Louis of Fever in Paris may not be applicable to Typhus as seen in Boston ; for the two diseases seem to me to be identical.

I cannot forbear at this time mentioning two circumstances, which more strongly than any others, induced me to commence this translation. Last summer I found that, though many talked of Louis and of the numerical method, few knew any thing about them. I therefore decided that I would do my part towards giving to my medical brethren of America the work which I thought would enable them to understand, better than any other work could do, Louis's mind and his method of study. I trust that this translation will do some good in teaching the younger portion of my brethren the value of exact, minute observation, and that many will ere long be ready to sympathize with the feelings of the Author, when he says, " How interesting becomes the study of any facts, even when apparently insignificant, if they be only numerous, minutely detailed, and well authenticated ! "

My second reason for commencing this translation was, that I might have an opportunity of paying a solemn tribute of affection and respect to the memory of him who first led me to duly value this work. For those who have read the " *Memoir*" of his life, nothing more will be wanted to satisfy them of the rare combination of intellect and of heart which he possessed, of his untiring devotion to the cause of science in its broadest

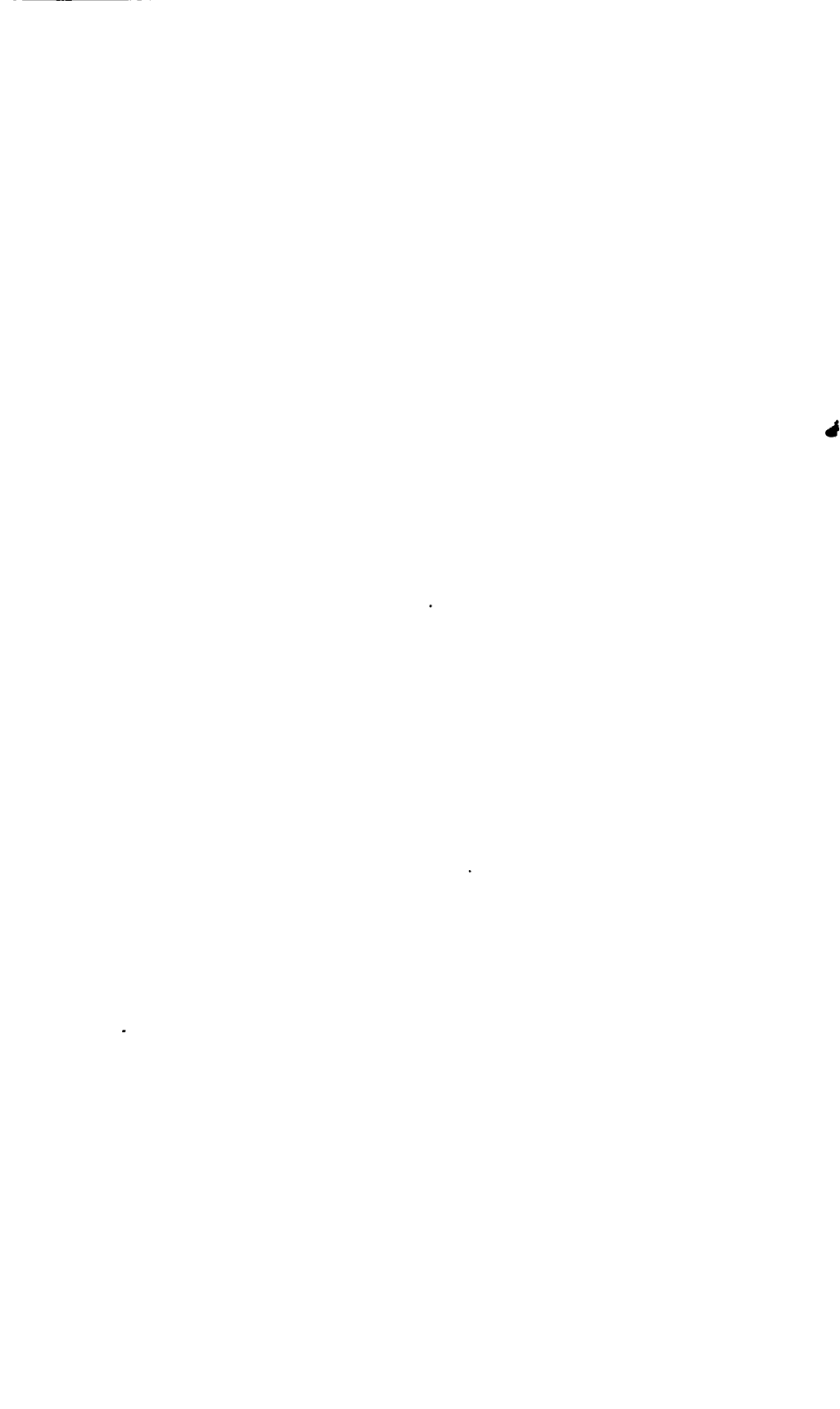
sense, and his equally unbounded affection for whatever is pure and lovely in human nature, and in the external world. I would not say that he was perfect, but every one who knew him, will, I am sure, grant that the model of human nature he strove to imitate was truly great. Our connexion with each other while in Paris was more intimate than I ever enjoyed with any other companion, *omnium consiliorum, voluntatum, sine ulla exceptione, communitas* ; his friendship was not merely pleasant, but greatly useful to me. He spoke the truth to me plainly, yet with the gentleness of a sister and the fearlessness of a true friend ; by his zeal we were all animated ; over his early grave we have mourned. For these reasons I dedicate this translation

TO

THE MEMORY

OF

JAMES JACKSON, JR.



ADVERTISEMENT BY THE AUTHOR.

CONTINUED fevers (the typhoid affection*) have attracted the attention of physicians of all ages ; they may be said to have engrossed it entirely of late, and, as it was natural to anticipate, the questions relative to the seat and nature of fevers have been examined by many individuals and decided in various ways. Some authors, satisfied with the facts collected by the ancients, have thought that they afford sufficient proof of the truth of their doctrines ;† others, relying upon observations more recently made,

* For a long while I endeavored to find some word, which would express the anatomical characteristics of this disease, without being disagreeable to the ear, but being unable to find one, I have retained the expression, "typhoid affection," which, at least, is not inconvenient. — LOUIS.

† It is not improper, I think, in this place, to remark that we ought not to depend upon the authority of the ancients in regard to questions relative to the seat of diseases, for these questions can be settled only by a comparison of the symptoms with the lesions found, and the ancients were ignorant of pathological anatomy. It is not true, moreover, as has been said too often, that facts do not become old. Doubtless, there are facts, that have been well observed, which have not become old, and which never can, since they have been accurately observed ; but the immense majority of them have become so, and, moreover, those which we collect in these times, will, in like

have yet arrived at the same result, and have considered the alterations of the intestinal canal as some of the consequences not immediately connected with the disease ; the greater number have viewed fever as a simple gastro-enterite. Some, after having collected and examined a certain number of facts, have regarded the group of symptoms designated by the word fever as the result of various lesions, sometimes of one organ, sometimes of another, or although inclining very much to a belief in the opinion, which fixes the seat of the disease in the intestinal canal, they have yet been unable to arrive at any definite conclusion, and have remained in doubt.

In this state of doubt are many men of the first talents of the present day ; they ask only for proof of any opinion in order to be ready to adopt it, but they think that the facts which have been collected heretofore are insufficient to produce conviction. New researches are, therefore, necessary, and it is in the hope that those I now offer will be beneficial to science, that I have determined to publish them.

In order to be able to make up my opinion upon a question concerning which one could decide very little by means of simple discussion, I collected between the years 1822 and 1827, the histories of all the patients suffering from acute diseases, which were admitted into the hospital of La Charité, in the wards St. John and St. Joseph, at that time under the superintendence of M. Chomel. I collected during this space of time, in addition to some incomplete facts, one hundred and thirty-eight observations

manner, in their turn, become old, for they will carry with them more or less the impress of the age, and of its methods, which, it is true, are more exact than those pursued in former times, but they are less rigorous than those which will take their places in ages to come. It is necessary for those who devote themselves to observation to be convinced of this truth, and to recall often to mind the fact, that the best work is good only in relation to the epoch at which it appears, and that another must be anticipated that will be more exact and more complete. — LOUIS.

of typhus fever, fifty of which were relative to individuals who had died of it. I analyzed all, and in order to determine among the numerous lesions found in the patients who died those that are peculiar to typhus, I compared them with the alterations found as consequences of other acute diseases, in eighty-three subjects whose histories I learned. I did the same with the symptoms observed in those affected with typhus fever, or with any other acute affection, which terminated in restoration to health or in death, so that I have analyzed the diseased changes of the viscera of one hundred and thirty-three subjects, and the symptoms of nearly nine hundred.

In these analyses I have not made use of any records of disease which did not appear to me to be sufficiently exact,* and whenever I have made deductions from those which were exact, I always kept in mind the thought of the author of *Émile*. "I know that truth lies in the facts, and not in the mind that judges of them, and that the less I introduce what is merely my own into the deductions I make from them, the more certain I shall be of approaching the truth."

I have divided my work into four parts.

In order to give, at the outset, a just idea of the symptoms and lesions which characterize typhus fever, I have devoted the first part to the history of eighteen patients who died, at very different intervals of time from the beginning, and in whom these symptoms and these lesions were equally well marked.

In the second, I have given a general description of the lesions found in patients who died of this affection, and also in those who died of other acute diseases; afterwards I have shown the principal causes of death in both of these classes of patients, and have

* Among those which I did not consider sufficiently accurate, were all those which I collected during the first six months of the six years which I devoted to the observation of disease, for they were somewhat incomplete in their details of the appearances of the organs after death. — *LOUIS*.

terminated with a rapid sketch of all the alterations previously described.

The third part contains, in as many chapters, the account of the symptoms of the patients who died, and of those who recovered ; the diagnosis of the disease ; cases relating to patients in whom the typhus affection was latent ; others, in which its anatomical characteristics were slightly marked ; and others, in which the patients experienced the greater part of the symptoms that characterize this disease, without being really affected with it. The last two treat of perforation of the small intestine, and of the causes of the affection, which it is the peculiar object of these researches to elucidate.

In the fourth part there is an analysis of the facts which relate to the action of blood-letting, of tonics, of blisters, of ice upon the head ; and it is terminated by an exposition of the principal rules to be observed in treatment.

The first three contain, in addition to what has been already stated, the histories of the fifty patients who died, so that the reader, if he choose, may at any time verify the conclusions I have deduced from the facts.

Although my work is not a treatise upon typhus, as it ought to be considered merely as a detail of the facts which I have collected in relation to this affection,* still the hope of arriving at conclusive results, has led me, as has been seen, to make an

* It is for this reason that I have considered it unnecessary to examine the opinions of authors who have devoted themselves with the most success of late to the study of fevers. I will add that I could not have done so without increasing the bulk of my researches, which was already very considerable. The time for this examination is, perhaps, not yet come, and another would make it better than I could. Nothing less than all these considerations could have made me renounce so good an opportunity of rendering a just homage to my brethren, and of paying the tribute of my gratitude to those who have, in their writings, shown the greatest kindness to me. — LOUIS.

analysis of a great number of facts relative to affections of another nature. This will explain the length of my work.

I have sought always to give clearness to my views, which, together with rigid exactness, is the most indispensable of all qualities; and I have attempted to gain this end as much by phraseology as by the arrangement of the different subjects treated of.

I will make but one more remark. In a work like this, where so many symptoms and lesions are described, compared, counted and examined in many different points of view; where the object has been not to write one single useless phrase, exactness alone ought to be sought after, and, perhaps, it will be found in too rigid a form. But if, notwithstanding these defects, any friend of truth should consider the work as being useful to science, I shall find in his testimony recompense for a labor which has been of so difficult a character that it would not be easy for any one, except myself, to form any correct idea of it.



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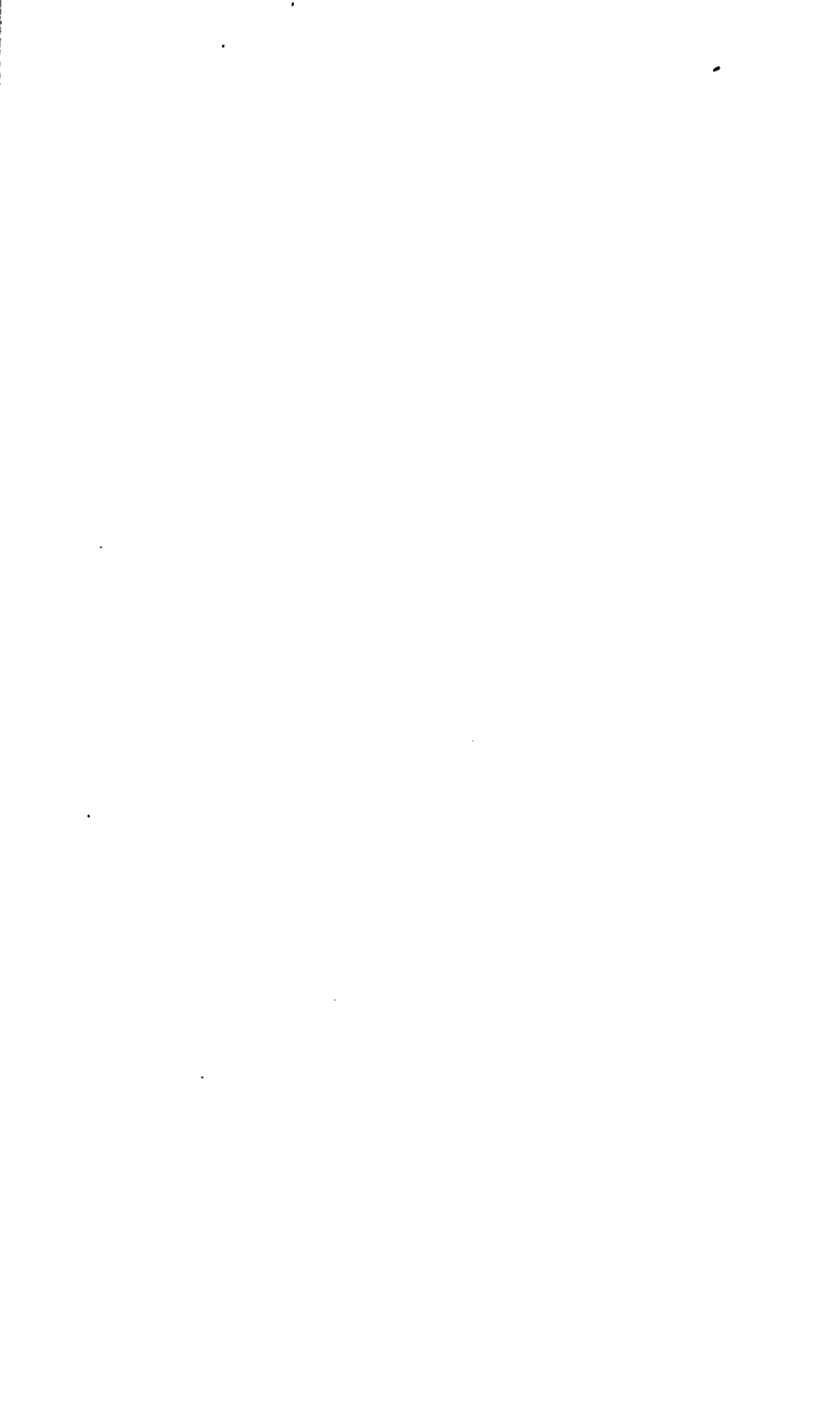
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ANATOMICAL
PATHOLOGICAL AND THERAPEUTIC
RESEARCHES,
UPON THE DISEASE KNOWN UNDER THE NAMES
OF
GASTRO-ENTERITE,
PUTRID, ADYNAMIC, ATAXIC, TYPHOID FEVER,
ETC. ETC. ETC.

FIRST PART.

I SHALL give in this first part, a certain number of facts, in which the symptoms and lesions which characterize the disease, which it is the chief aim of this work to elucidate, are equally well marked, and the relation between them evident. As I consider it of importance to call the attention of the reader, first, to the anatomical characteristics of this affection, I shall do so, adding only those reflections that may be necessary in order to make this part of my work more plain than it otherwise would be. Thus prepared, the mind of the reader can examine, with more ease, the details of the general descriptions which will follow. I shall divide the facts of which we are now to speak, into three groups, according to the period, at which the individuals died.

PART I.

OBSERVATIONS.

CHAPTER I.

OBSERVATIONS RELATIVE TO PATIENTS WHO DIED BETWEEN THE
SIXTEENTH AND THE THIRTIETH DAYS OF DISEASE.

FIRST OBSERVATION.

Diminution of the appetite, feeling of general heaviness during the three first days ; considerable diminution of strength, complete anorexia ; copious diarrhoea from the beginning ; pains in abdomen seldom ; meteorism, delirium, and prolonged somnolency ; death on *twentieth day*. Elliptical patches of the ilium red, and very much ulcerated ; mesenteric glands red, voluminous, softened ; studded with yellow points ; inflammation of the gall-bladder ; œdema of the glottis, &c.

A MAN æt. 23, of medium size, and rather thin, was admitted to the hospital of La Charité, September, 17th, 1824. Had been residing at Paris for six months, and during previous four months, had been occupied in the preparation of warm baths, in various parts of the city, and had always had good nourishment, had not been accustomed to excess of drink, had never ceased from his daily occupation. He said he had been ill, six days. In the beginning ; pain in the head ; inclination to sleep ; indistinct vision ; sensation as if dazzled ; pain in limbs ; general feeling of heaviness ; very great sensibility to cold ; with

extreme heat of skin ; urgent thirst ; complete anorexia ; diarrhœa. These symptoms continued, and the diarrhœa increased so that during the last three days, he had from fifteen to twenty dejections in twenty-four hours. At this time, new symptoms made their appearance ; to wit, nausea, vomiting, and pains in the epigastrium ; very few colic-pains ; and a slight cough commenced on the evening that the patient entered the hospital. All these symptoms had been preceded during three days by a slight diminution of appetite, and a feeling of general languor, or dulness. Our patient had kept his bed from the outset, and had taken only beef-tea for nourishment, and for drink, barley water sweetened with honey, with some wine mingled with it. He had taken also every day, one or two glasses of undiluted wine, and had not perceived any exacerbation of his symptoms, of those particularly which related to the stomach.

18th. Slight headache, face moderately and uniformly red, without any peculiar expression ; buzzing in ears, is dazzled on rising in bed ; answers slowly, but correctly given ; memory clear ; somnolency ; bruised feeling in limbs. Tongue moist, of a vivid red at tip, whitish in other parts ; mouth pasty, anorexia ; intense thirst ; stricture at epigastrium, increased by pressure ; the rest of abdomen is not painful on pressure, and it is slightly meteorised. No rose colored, lenticular spots* on its surface ; pulse regular, active, not full, beats ninety-five times a minute ; skin hot, dry ; coughs but

* I shall retain the literal translation of the words of the original, inasmuch as they express very exactly the appearance of the eruption on the skin. Generally the spots are not raised, and even when they seem somewhat so to the finger passing over them, they can hardly be called pimples, which is a term becoming very common in this country when speaking of this peculiar affection of the skin, and it is, in my opinion, improper. — H. I. B.

very seldom ; respiration slightly accelerated ; not a little oppression at chest.

(Orge. sir. tartar,* three times ; flax-seed enema ; emollient fomentations over epigastrium.)

Patient had at least twenty dejections during the day, and excepting a slight redness of the eyes, dryness of the tongue at its tip, and some pain in the iliac fossæ, his state at the visit, on the morning of the 19th, was the same as it was the day previous.

(Blister to legs.)

During the night of the 19th and 20th, delirium ; loquacity ; patient got out of bed, and the straight jacket was applied. 20th. Face moderately animated, features calm ; lips trembling slightly ; patient says he is very ill, and refers all his malady to the epigastrium, although pressure there does not appear painful ; speaks incoherently. Tongue dry, red ; abdomen meteorised ; pulse at one hundred and ten ; skin somewhat hot ; dejections much less numerous than yesterday.

(Bleeding to ξ x.)

During this day no amelioration, alternation of great drowsiness and of delirium ; same state of abdomen. On 21st, appearance of face calm and natural, eyes slightly injected ; drowsiness nearly constant ; tongue of a blood red hue, easily protruded, abdomen a little meteorised ; epigastrium sensible to pressure ; some rose colored lenticular spots upon abdomen ;

* I shall also endeavor always to translate the different terms made use of to express particular preparations of medicine, but when, as in the present instance, a translation is difficult or impossible, I shall give the original French, and request the reader to look at the appendix for an explanation. — H. I. B.

respiration sufficiently calm; blood drawn yesterday nearly diffuent.

(Orge. sir. tart. twice; whey; flaxseed enema; emol. foment.)

From this time until 27th, the day of death, the state of the patient became gradually worse. Nearly all the time there was profound drowsiness; he complained on 24th of his extreme weakness, was delirious, and on the nights of 25th and 26th he ran about the ward, with no clothing upon him except his shirt. His features from the 25th presented marks of evident sinking; his eyes were very much injected on the 22d; epistaxis on that day, and another more copious on the 26th. The tongue was always dry and soft, of a pale red; intense thirst; dejections not very frequent, but involuntary, as was the urine. The abdomen remained meteorised to a moderate degree, was sensible to pressure, and covered with lenticular rose spots on 24th. The pulse at eighty-four, on 25th and 26th was always small and feeble; some heat of skin; respiration calm or slightly accelerated; respiratory murmur was free from any râles* in front, and at the sides of the chest; the blisters bled very copiously, especially on 26th.

27th. A short time after the visit, our patient was placed upon the close stool, where he passed a pultaceous, brownish matter, of extreme fœtor; his tongue was perfectly clean; respiration a little blowing, and a quarter of an hour afterwards he expired.

The drinks first made use of were continued until 24th, and on 25th were prescribed two quarts of a cold infusion of cinchona;

* I shall retain the word *râle*, inasmuch as there is no word in English corresponding to it, which does not convey a wrong idea of the original French term. — H. I. B.

one quart of lemonade; and a gum potion with twenty grains of sulphate of quinine.

Opening of the corpse twenty-three hours after death.

EXTERIOR. — Numerous red lines like what would be produced by severe blows with rods, upon the lateral and posterior parts of the body; skin corresponding to the blisters reddish, and a little thickened; subjacent cellular tissue containing fat a little more dense than in the neighboring parts; muscles firm, not sticky, and of a natural color.

HEAD. — *Arachnoid* thick, opaque towards back part; on each side of the longitudinal sinus was a rather large number of white granulations (*Pacchioni's glands*,) of many different sizes. Slight effusion under the arachnoid; a half spoonful of limpid serous fluid in each lateral ventricle; one spoonful in the lower occipital fossæ.* All the mass of the brain was of a good consistence; the central part of the medullary substance was injected, as was the pia mater, to a remarkable degree.

NECK. — *Cervical glands* red, voluminous, and of good consistence. Edge of the *glottis* of an obscure red, not very dark; it was two lines thick, was infiltrated, so that the opening to the air passages, was only two lines and a half in diameter. The external parts of the glottis and the ligaments of the epiglottis, were wrinkled, as if the infiltration at first had been considerable, but had afterwards diminished. Immediately below the left superior vocal cord was a black, rounded spot, about one line in diameter, upon which the mucous membrane, and a thin portion of the submucous tissue were extremely softened, and could be scraped up like pulp. The

* I would inform the reader that whenever the word spoonful is used without qualification, it will indicate a soup-spoon, (about $\frac{2}{3}$ ss.) — *LOUIS.*

mucous membrane was also softened, although to a much less degree, below the inferior vocal cords, over a space of four or five lines. Moreover, the *trachea* had a slightly red hue, but otherwise it was perfectly healthy.

CHEST. — *Heart* less firm than in the healthy state; *aorta* a little reddened at intervals. Three spoonfuls of bloody serum in each *pleura*. *Lungs* perfectly free from adhesions, soft, sufficiently light, with some traces of congestion towards their bases; they were of a pale rose color at their front, mingled in some few places with blackish spots. These latter were more numerous, and larger behind, especially towards base of the organs than anywhere else in them; they extended into the substance of the lungs from one to two lines deep; and the pulmonary tissue, in the corresponding parts was a little more dense than in elsewhere. The *bronchia* contained a moderate quantity of red mucus.

ABDOMEN. — *Æsophagus* perfectly well. *Stomach* a little larger than usual. Mucous membrane of a somewhat vivid red, at the right of the cardiac orifice, for the space of eight or ten square inches; in other parts it was of a bistre color; it was mamelonated throughout its whole internal surface, save in the great cul-de-sac, and along the small curve; was covered, with nearly the same exceptions, with rather a large quantity of viscid mucus; and the membrane was of a proper consistence and thickness throughout.

Small intestine was a little more voluminous than natural, and in its interior contained every where a blackish, viscid, stringy matter; under which the mucous membrane was, in the first half, greyish, or slightly shaded with red; of proper thickness, and of a consistence little less than that which is natural to it. Beyond it was of a vivid red, and very much softened, especially in the last five feet, where it could not be raised in

strips, and where the subjacent cellular tissue was a little infiltrated. In this same part were seen thirty elliptical patches, some ulcerated others not, but all more or less thickened.* The first three covered about an inch and a half of surface, were whitish, and composed, as in health, of a great number of small grains, very apparent, particularly on the surface of mucous membrane, that adhered to the subjacent cellular, and being larger than usual, they caused the mucous membrane at this point to be a millimeter† in thickness. The cellular tissue corresponding to them was of its usual whiteness, and a little thickened. After these patches came two more a little more prominent, of the same structure, of a somewhat vivid red, slightly ulcerated, and under which the submucous tissue was very red, and very thick. Finally, the mucous membrane was entirely destroyed throughout the whole extent of the other patches, and the bottom of the ulcerations, more or less uneven, was formed by the cellular tissue, which was of a deep red color, and about a millimeter thick. This latter tissue itself was more or less largely destroyed, and the muscular membrane laid bare, by the last ten ulcerations. The last, situated near the ilio-cæcal valve occupied the circumference of the intestine, and was ten or twelve lines broad. The muscular membrane was laid bare over nearly its whole surface, and at its edge were a great number of membranous slips, which, after repeated washings, had still a gangrenous odor. Much shorter

* The elliptical patches that are found in the track of the small intestine, especially in the ileum, in the natural state, have been already described minutely in my "Researches upon Phthisis." The reader may consult that description, and consequently I have thought it would be useless to repeat it in this work. — LOUIS.

† The reader is probably aware, that there are about twenty-five millimeters in our English inch. — H. I. B.

strips were detached from the ulcerations, and floated in the water in which the intestine was placed.

Large intestine, contained a matter similar to that which was in the small, less viscid and less colored in the rectum than elsewhere. Its mucous membrane was greyish or blackish, except in this last part, where it was of a pale red; it was of double the usual thickness, and of good consistence in the ascending colon; it was thinner and more or less softened thence towards rectum. *Mesenteric glands* greyish, firm, increased in size near duodenum; but they were of a more or less vivid red, moderately softened, and of the size of a filbert, spotted in their interior with a considerable number of yellow points, in the latter half of the intestine. The glands of the mesocolon were blackish, and of the size of a pea. The *spleen* was more than three times its usual size, of an amaranthine red color, very soft, so as to be easily reduced to a pulpy state by pressure. *Liver* soft; rather pale, and its two colors were nearly confounded with each other. The *gall-bladder* was of the size of a goose-egg, and contained a reddish, thin liquid, at the bottom of which was a thin puriform fluid, without sediment. Its mucous membrane was reddish, and whitish; of natural thickness and consistence. Biliary ducts and other organs in the abdomen were in a healthy state.

There was, as we shall see, a perfect harmony between the symptoms, and the lesions to which they could be referred; for if the one were grave, the others were not less so. The patient, when he fell sick, had been at Paris for six months, and had been engaged during four in a very fatiguing employment. He experienced during the first three days, uneasiness with a feeling of lassitude; slight diminution of the appetite; afterwards, headache, pains in his limbs, obscure vision, with

sensation as if eyes were dazzled ; somnolency ; diarrhœa ; complete loss of appetite. These symptoms continued ; the diarrhœa became more severe, and a short time after their appearance, pains in the epigastrium supervened with nausea, and vomiting, but this latter symptom very soon disappeared. The weakness soon became considerable ; delirium more or less violent, alternating with somnolency manifested itself on the twelfth day of the affection, and on the twentieth, the patient died without struggle, and at the opening of the body there was found a somewhat vivid injection of the pia mater, and of the medullary substance of the brain ; also a slight infiltration of the edge of the glottis ; an evident softening of the liver, and a still greater one of the spleen ; traces of inflammation of the gall-bladder ; a mamelonated state of the mucous membrane of the stomach. There was also a softening of the mucous membrane of a portion of the large intestine ; this softening was not to the same degree throughout its whole extent. There was besides, a much greater softening of the small intestine. Especially was there an important alteration in the elliptical patches of the ileum ; and upon this point it will be necessary to speak more fully.

All these patches were more or less thickened ; some which were farthest from the large intestine, were white, not ulcerated ; the others more or less red, had ulcers upon them, that varied in depth, so that according as it was nearer the cœcum the ulceration was larger and deeper. The largest of all, the last, near the ilio-cœcal valve, occupied the whole circumference of the intestine ; and the muscular membrane was laid bare by it, to almost the whole of its extent. From this, it seems natural to conclude, that the patches that were nearest the cœcum were the first to be affected, that the inflammation gradually arrived at the others ; and finally, the three patches

which were not ulcerated, were pale, thickened, and had nothing except this thickening in common with the others.

The state of the mesenteric glands tends to confirm this opinion, the glands being more voluminous near the cœcum than any where else, and having no purulent spots save in this vicinity. And as the lesion of elliptical patches of the ileum was the gravest, the most important of all those found in the intestinal tube, it seems natural to allow it commenced before any of the others, and that to it should be referred the first symptoms of the affection, consequently the diarrhœa ; so that, although this symptom was rather severe, at first, it must be attributed exclusively to the state of the small intestine, at that time.

Another fact of which the importance will be better appreciated hereafter, but which it is proper to mention at this time, is this, namely, the cellular membrane of the patches had undergone an alteration analogous to that of the mucous membrane ; and where the mucous membrane was thickened and yet of a whitish color, the cellular was of the same color, and proportionably as thick, so that it is impossible rigorously to demonstrate whether these two tissues, the cellular membrane and the crypts were attacked in succession, or simultaneously.

The patient having had no symptom which could be referred to the liver, it was impossible to foresee the lesion of the gall-bladder, a lesion which is quite rare, as we shall hereafter see, and evidently of an inflammatory nature, although the mucous membrane of the bladder was changed in color merely. It is probable, moreover, that like most of the alterations, except those of the ileum, this took place only a short period before death, which also explains the absence of the symptoms to which I alluded.

There can be no doubt that the œdema of the glottis com-

menced at a period still less remote, and its latent state shows better than any other lesion how many disorders may commence during the last moments of life, without being announced by any peculiar symptoms ; for if we suppose the whistling, which I noticed, was owing to the œdema, we cannot, upon so slight an indication, assert positively that this sound was thus produced. Nevertheless, it is probable that the absence of long struggle previous to death, was due to the state of the glottis, which must have caused a speedy suffocation of the patient.

I shall refer at some future time to the state of the stomach and brain ; I will observe in this place that the alteration of the former was slight, although the gastric symptoms were severe ; and in order that we may be able to suppose them to have been dependent upon the mucous membrane, from the moment they began, their origin must have been after that of the disease ; now, such was the fact ; probably, therefore, the stomach was not affected at the beginning of the fever.

SECOND OBSERVATION.

Regular dejections, or constipation during several days ; pains in abdomen at the same time ; slight feebleness at first ; which afterwards was very great, with delirium ; somnolency ; considerable meteorism ; death on *twentieth day*. Very numerous ulcerations in the ileum ; mesenteric glands corresponding to them red ; voluminous ; softened ; spotted with yellow near the cœcum ; considerable distention of the large intestine, the membranes of which were a little thickened ; softening of a great number of the viscera, etc.

A CORRECTOR of the press, with a large chest, and well-developed beard ; not very fleshy, and of a somewhat pale com-

plexion, entered the hospital of La Charité, August 30th, 1824. At Paris last eighteen months, and had always enjoyed good health ; had never had severe disease since eight years of age ; now sick eleven days. During the first seven, pain in head ; disturbed sleep, or entire watchfulness ; sometimes pricking sensations in eyes ; great thirst ; complete anorexia ; at times pains in abdomen without diarrhoea ; alternations of heat and of cold ; sweating at night. These symptoms continued with increased violence ; patient continued to work during the first five days, and then was obliged to go to bed. Nausea, vomiting of bitter bile, and some pains at the epigastrium took place on 28th ; buzzing in the ears began on the same day, and never ceased afterwards. Never any chills nor sensations as if eyes were dazzled ; no epistaxis ; nor deafness ; almost constant constipation.

On 31st, patient had a fatigued or sleepy appearance ; frequent somnolency ; answers just and extremely brief, almost always yes or no ; at times pricking sensations in eyes ; considerable weakness ; so that it was necessary to carry the patient from the yard to the ward of the hospital. Tongue yellowish and greyish at centre ; other parts perfectly natural ; great thirst ; deglutition easy ; abdomen not painful on pressure ; was slightly meteorised ; and on its front part were some lenticular spots, of a pale rose color ; constipation ; urine easy. Pulse regular, a hundred and one ; rather full and firm ; skin hot ; some sweat. Some oppression ; respiration not hurried ; never has had cough ; nevertheless a little mucous râle is heard about the left scapula.

(Ol. Ricin \mathfrak{z} i. ; whey ; emollient enema.)

Three dejections during the day ; delirium and much agitation at night. On 1st of September the delirium continued, and to questions relating to his disease the patient answered,

with a laugh, — “Do you call me sick?” Appearance of face same as yesterday; voice somewhat trembling; attitude natural; pulse a hundred and seven; perfect calmness.

(Lemonade twice; whey twice; emollient enema; forty leeches to the ears.)

Considerable loss of blood; continual but quiet delirium; no dejections. On 2d, expression of profound indifference; patient spoke feebly, and in disconnected sentences, and with hesitation; tongue a little dry, without redness; abdomen much meteorised; not painful on pressure; covered by numerous rose colored lenticular spots, which were spread thickly over its whole surface; pulse moderately large and full, at hundred and five; some heat of skin; no sudamina.

(Sinapisms to legs.)

During the day the patient kept obstinately silent; arose once to discharge the enema, and once without any apparent motive. Having been brought back to the bed by the ward-tender, he struck the attendant several blows with his fist, without, however, uttering a word.

On 3d, same taciturnity; no answer to questions; tongue soft, red at edge, white in centre; abdomen very tympanitic; not painful on pressure; many involuntary dejections; some lenticular spots as yesterday; pulse a hundred and twenty; not full; skin warm; respiratory murmur free from any râle. The patient allowed himself to be examined in auscultation, and remained without motion like an inert body.

(Blister to legs; ice upon the head.)

From this time until the 8th, the day of his death, the following notes were made. The taciturnity continued; the patient continued always as immovable as before, and lying on the back. 4th, the face bore the appearance of one in deep thought; 6th, it was redder than usual. His eyes, gen-

erally without expression, were partly covered by membranous mucosities on the 7th ; the tongue moist and yellow on 4th ; was constantly dry afterwards ; dejections almost always were involuntary ; meteorism to the greatest degree possible during 4th and 5th ; a little less of it during the following days, although it was always considerable. The pulse was very frequent and very irregular on the 4th ; the beating of the heart was nevertheless regular ; very great heat of skin. Violent trembling followed by heat and copious sweats on 5th and 6th ; towards two in afternoon. No cough was observed, at any time, and the patient died at five, A. M.

(Ice was re-applied on 4th ; eighteen leeches were applied to the neck, and sinapisms to the feet during 5th and 6th.)

Opening of the corpse twenty-five hours after death.

EXTERIOR. — Some white stripes upon the right shoulder, presenting the appearance as if part had been struck with rods.

HEAD. — About one small spoonful of serosity in the superior cavity of the *arachnoid*. Slight traces of effusion under this membrane. A spoonful of serosity in lower occipital fossæ ; none at all in the lateral ventricles. *Pia mater* a little red ; cortical substance slightly shaded with a rosy hue ; *medullary* somewhat injected ; both of a good consistence.

NECK. — *Lymphatic glands* a little more red and larger than natural. *Epiglottis, larynx, trachea* well, or with merely a slight greenish color.

CHEST. — A pint of red, limpid fluid in both of the pleural cavities. *Lungs* perfectly free from adhesions. Right heavier than the left ; of a deep red externally and internally, especially towards bottom of posterior part ; from which by pressure could be squeezed a black liquid, which did not con-

tain any air. *Left lung* presented the same alteration, but in a less degree, so that the liquid pressed from it, at its base, had some bubbles of air in it. *Heart* extremely soft ; walls of right ventricle a little more than a line in thickness. *Aorta* of a deep red throughout its first half, much less so, afterwards.

ABDOMEN. — *Æsophagus* natural. *Stomach* of a small volume, greyish in its interior ; containing a small quantity of liquid of the same color. Mucous membrane had a similar hue, interrupted here and there by some red spots ; it was of its natural thickness and consistence, except in some parts of the great cul-de-sac. It was mamelonated throughout nearly its whole extent.

The *small intestine* was of moderate size, and contained rather a large quantity of bile and mucosities. Its mucous membrane pale or yellowish, had many black points in some parts of it, was generally less consistent than usual, and soft as mucus in its four last feet. In this same portion were *forty ulcerations*, from four lines to an inch in size, situated, for the most part, opposite the mesentery, upon the *elliptical patches*. They were nearer one another and larger in the neighborhood of the cæcum than any where else ; and showing the muscular tissue laid bare, or but partially covered by a thin strip of cellular membrane. Their edges were more or less red, and elevated ; were separated in some points from the subjacent parts ; and were composed of portions of the mucous membrane, and cellular tissue of the patch, which remained undestroyed, but chiefly cellular tissue, which was redder and thicker than the mucous membrane. The *large intestine* was very much distended, so that the longitudinal bands were nearly one inch wide. Its mucous membrane was pale, and at least as thick

as natural ; it was somewhat softened through a sixth part of its length ; and there were two small ulcerations in the cœcum and right colon, with smooth edges ; and by them the cellular tissue had been exposed. Muscular coat a little thicker than common. *Mesenteric glands* opposite the jejunum were larger than usual, and of a greyish color ; those which followed were much thicker and redder, softened and studded with yellow points ; those in the neighborhood of the cœcum were opaque in their interior. The *liver* was flabby ; of medium size ; of a violet color, pale within, where it was difficult to distinguish the two colors. The *gall-bladder* contained a moderate quantity of clear bile. The *spleen* was at least three times as large as usual, and of a red brown color, easily reduced to pulp. *Kidneys* were of moderate consistence, of a livid color, which became greenish by the contact of the air with the parts cut open. Other *viscera* well.

Notwithstanding some differences that were rather remarkable, between this observation and the preceding one, with regard to the symptoms, it was impossible not to perceive the resemblance between the two ; and one would have anticipated, before death, finding on examination, lesions more or less similar to those which were described in the first.

In fact, there was, as in the preceding observation, delirium, stupor, epistaxis, rose colored lenticular spots, meteorism, and if the diarrhœa did not take place until some time after the commencement of the disease, the pains in the abdomen during the few first days did not less surely indicate its seat, than the diarrhœa did. As to the lesions, that of the ileum was the most severe, and without doubt commenced the earliest, and it followed the same course as in the first case, since the ulceration of the patches were more numerous, and larger in the

neighborhood of the cœcum than any where else. The mesenteric glands were larger and softer, according as they were nearer this last intestine, near which only some of them had purulent points in their substances. This similarity between the lesions was not limited to those of the ileum and mesentery. As in the subject of the preceding observation, the spleen was enlarged and very much softened; the liver was pale and flabby; the brain a little injected, and its cortical substance had moreover a tinge of red. The heart was extremely soft; the aorta very red on its internal surface; and the large intestine was very much distended with gas.

Without noticing farther the softening of the heart, or the redness of the aorta, I will remark that the mucous membrane of the large intestine, had, notwithstanding its distention, at least, its usual thickness, consequently there was a real thickening; it was also pale throughout its whole extent, and softened in some points only, so that we cannot attribute this excess of thickening to inflammation. The muscular coat itself was a little thickened, and we shall see hereafter that this double lesion, must be regarded as the effect of the meteorism, or of the re-action it excites in the different coats of the colon.

As to the small ulcerations of the small intestine, some of which were not opposite the mesentery, and consequently not upon the elliptical patches, we cannot suppose them to have been in a different tissue from the others, if we remember that, in the healthy state of the canal, there are found frequently in the ileum together with the elliptical patches, others irregularly shaped, but of the same structure, and much smaller. They are found between the former, or in other parts of the circumference of the intestine. Upon these probably arose the ulcerations of which we are now speaking.

Those of the cœcum and colon do not invalidate, by any

means, what has been said with regard to the length of time the ulcers of the small intestines had lasted ; the latter were deep ; the former superficial.

At some future time, I shall show the value of the rose color of the cortical substance of the brain, in any case where it may be observed, and I now pass to the third fact, not less interesting than the preceding ones.

THIRD OBSERVATION.

Diarrhoea from beginning ; somnolency ; delirium from the third day ; then considerable meteorism ; momentary subsultus tendinum ; death on *twenty-sixth day*. Ulceration of the elliptical patches of the ileum ; mesenteric glands corresponding to them bluish, enlarged, softened, with yellow points in them, or concrete masses of the same color, near the cæcum ; softening and thickening of the mucous membrane of the colon ; that of the stomach mamelonated and somewhat softened.

AN errand boy, æt. 19 ; at Paris during last thirteen months ; of a moderately strong constitution ; fell sick September 25th, 1824, and was brought to the hospital of La Pitié on 2d of October following. He had experienced in the beginning diarrhoea ; intense headache ; with feeling as if eyes were dazzled ; considerable weakness, so as to be able only with great difficulty to support himself in an erect posture, and was obliged to go to bed on second day of attack. On the third, delirium and inclination to sleep came on, in addition to the preceding symptoms ; chills at that time, and frequently afterwards ; the patient had never been troubled by nausea nor vomiting. Leeches applied to the epigastrium, and to the neck had not been followed by any appreciable effect.

The delirium was very severe during the nights of 2d to 3d

of October ; and on 3d, at the hour of visit, we found the patient in the following state. Answers questions very strangely, or remains entirely silent ; tremor of voice ; perfect indifference to everything that passes ; eyes fixed ; very frequent drowsiness ; tongue dry and trembling, not red ; abdomen somewhat meteorised ; dejections involuntary. Pulse ninety, not hard ; heat great ; no sudamina ; respiration moderately accelerated. Dry and sonorous râle at anterior part of chest in inspiration. Patient says he suffers every where, although pressure upon any part of abdomen does not excite any distortions of the countenance.

(Sweetened barley-water, three cupfuls ; enema ; emollient fomentations ; two blisters to legs.)

Delirium continued ; no dejection during the day. During the night much agitation ; and patient several times wished to leave the bed, where he was forced to remain by means of the straight jacket. On the morning of the 4th he was alternately muttering to himself, or overcome by somnolency ; otherwise he was in the same state as the day previous.

5th and 6th, same delirium and somnolency ; slight stupor ; vermicular subsultus tendinum ; tongue trembling very much, dry, rough ; abdomen a little meteorised, and slightly painful on pressure ; covered with lenticular rose spots ; no evacuation from bowels, without enemata ; pulse rather small, regular, at one hundred ; respiration same as on the first day, and patient when asked whether he is suffering any pain, says he does not know.

The blisters, being somewhat livid and discharging much pus, were dried up, and two others applied to the legs.

The same symptoms continued with some slight variations, until 20th, the day of his death, that is to say, during the space of two weeks, and until that time I observed as follows.

There were alternations of delirium and somnolency ; this last was almost constant, and accompanied, as previously, by muttering. The nights were generally restless, and the straight jacket was nearly always necessary. The stupor, momentarily dissipated on 7th, was very profound on 8th ; diminution of strength was more marked on 15th than before, and still more during the following days. A considerable stiffness of the lower limbs was observed on 12th, but not afterwards. On this same day was discovered an eschar on the sacrum, which fell off on 18th. The tongue was constantly dry and red ; many times the patient refused to show it, and it could not be seen save by compressing the nose. The dejections were always involuntary, and often numerous between 10th to 14th. The meteorism diminished soon, and disappeared on 13th. Pulse, feeble and irregular, on 12th continued at one hundred and four, until within three days before death, during which it beat from one hundred and sixty to one hundred and eighty times per minute. The skin was always very hot, especially during the night. On 18th, was heard a kind of feeble crepitant râle at the front part of the right side of the chest, during inspiration. On 20th, at morning visit ; face was relaxed, and the respiration was quicker than during the preceding days. A little later, at ten, A. M., patient was somewhat restless ; muttered to himself incoherently ; his lips were of a violet hue ; pulse extremely small, rapid and difficult to count. At one, P. M., stertorous respiration ; continual motion of head from right to left ; and death took place at half past two, P. M.

The same ptisan was continued, and on 18th was added an aromatic potion with ten grains of musk in it ; and on 19th, two drachms of the extract of cinchona.

Opening of the corpse eighteen hours after death.

EXTERIOR. — Nothing remarkable except the ulceration of the sacrum ; muscles not sticky ; and of a natural color.

HEAD. — *Arachnoid* opaque and thickened in many points along the longitudinal sinus ; and not a granulation of the smallest size (Paccihoni's gland) was seen. Slight effusion under the arachnoid ; a spoonful of serosity in each lateral ventricle ; three in the lower occipital fossæ ; the four *ventricles* very much dilated. The substance of the *brain* was of a good consistence, and without any injection of vessels.

NECK. — *Epiglottis*, *trachea* and *larynx* all perfectly well.

CHEST. — *Heart* and *aorta* natural. The *lungs* filled exactly the cavity of the pleura ; were emphysematous and free from adhesions, except at some points near the base of the left lung, where were some cellular adhesions. The right was heavy, and at its apex was perfectly healthy ; it was somewhat hard, though elastic, in its lower three quarters ; and over this space its color varied from the deep fawn to the blackish red hue. This hardness extended into the substance, to the depth of two inches from the surface ; and in some points of it, the lung had a granulated aspect, whilst in others, it contained small opaque milliary granulations, generally confluent, and of a tuberculous aspect. On pressure a small quantity of a brownish fluid, not containing air, flowed from it. This same hardness, without granulations, or even a granulated appearance, was found in the left lung, but to a less extent, and the fluid pressed from it contained bubbles of air. The *bronchia* of right lung were redder than those of the left ; both were perfectly healthy.

ABDOMEN. — The *œsophagus* had no unusual appearance.

The *stomach* was of a small volume, and contained a moderate quantity of yellow liquid. Its mucous membrane had this same color in the great cul-de-sac, where it was soft and velvet-like; it was of an orange hue over the remainder of its surface, and to the same extent was mamelonated; its consistence was generally somewhat less than natural, and it had its usual thickness. But on the posterior face of the stomach, near the small curvature, at a distance very nearly equally distant from the cardia and pylorus, was a space about three quarters of an inch in diameter, having a slightly radiated aspect, and at this part the mucous membrane had only one third of its usual thickness, and adhered more than any where else to the subjacent cellular tissue, but had no other appreciable alteration. The *small intestine* had two places of intussusception from above downwards, to the extent of sixteen inches, and contained a moderate quantity of mucus mixed with bile. Its internal membrane was moderately consistent, slightly injected in its first half; reddish and softened afterwards, especially in the four feet nearest the cœcum, where even the shortest strips could scarcely be raised. In this last part were *ten ulcerations* of different forms and sizes, for the most part oval, situated on the part of intestine opposite the mesentery, upon the *elliptical patches*, which were more or less fully destroyed in places from six lines to two inches in size. In those nearest the ileo-cœcal valve, the muscular membrane was entirely exposed throughout their whole extent, which was not the case in the others, save in some points. Their edges were more or less elevated, reddish, and greyish; and this color was also in the cellular tissue whose thickness was nearly the same as that of the mucous membrane which covered it. A considerable number of crypts, or solitary glands, somewhat enlarged, and of which some had grey points at their centres, were in the intervals

of the ulcerations ; and between these and the duodenum were seen twenty-four *elliptical patches*, greyish or whitish ; thickened at their edges in consequence of the increased thickness of the mucous membrane and subjacent cellular tissue ; depressed at their centres as usual, and here they had but little more than the thickness which is natural to them.

The *large intestine* contained a small quantity of pultaceous faecal matter. Its mucous membrane generally greyish, was reddish in some points, and it was thicker than usual from the cœcum to the sigmoid flexure of the colon, where it had three times its ordinary thickness, and it decreased in consistence in the same proportion. The *mesenteric glands* were, for the most part, of a violet color ; they were larger according as they were nearer the cœcum, near which many presented on their cut surfaces some yellow points as of pus. There was also in the two, which were nearest the large intestine, a considerable mass of yellow concrete matter, of moderate consistence, and of a tuberculous appearance.

The *liver* was red and gorged with blood ; the bile in the *gall-bladder* was small in quantity and very liquid ; the *spleen* was easily reduced to pulp.

The sudden appearance of delirium ; its continuance ; the subsultus tendinum, a short time afterwards, gave to this affection the form which was called formerly *ataxic fever*, without the possibility, however, of there being any doubt as to its resemblance to the preceding cases. As in the first, the diarrhoea having appeared at the commencement, indicates that the disease, from that moment, had its seat in the abdomen ; there were rose colored lenticular spots ; a considerable meteorism which did not disappear until some days before death ; the

delirium alternated with somnolency ; the feebleness rapidly progressed to an extreme degree ; all these symptoms were those of the most severe continued fever. The most important lesion was in the ileum ; the ulcerations of this intestine increased in breadth and depth, according as approach was made towards the cœcum ; so that if one should confine himself to these three facts he would be led to think that the affection of the elliptical patches of the ileum exists in all the cases of typhus or continued fever ; and that, in the patients who die, it is the earliest affection, and begins in the neighborhood of the cœcum. Let us not forget, however, that in this case, as in the preceding ones, the thickening of the edges of the ulcers was the result of the combined thickening of the mucous and cellular membranes, which form the patches, and that both were more or less red and greyish ; so that these two tissues seem to have become affected simultaneously, and in the same manner. The state of the mesenteric glands must be here noticed, their alterations, always corresponding with those of the patches, being more important in the neighborhood of the cœcum than anywhere else.

It seems barely susceptible of doubt, that the alteration of the elliptical patches of the ileum, being the most severe, was also the earliest ; and that to it we must refer the first symptoms of the affection. The facts that will be narrated in the course of the work, will render this proposition incontestable, but we must not anticipate.

The meteorism, after having been considerable, ceased some days before death, and the mucous membrane of the colon was reddish and very much thickened. May we not believe that this thickening was the combined effect of inflammation and of the re-action produced by the meteorism upon the tis-

sues which form the parietes of the large intestine? This conjecture, which must appear very probable, will be better appreciated, after examination of the facts, when I make a general description of the colon.

If the heart and liver were more or less softened, in the first two observations, they were not at all in this; so that this double softening can be considered only as accidental lesions. And with regard to the quantity of serous fluid effused into the ventricles of the brain, or into the lower occipital fossæ, it cannot in any manner possible account for the cerebral symptoms, inasmuch as a similar effusion occurs in many cases where there has not been delirium, and always when the agony of death has been of long duration, as in the present case.

FOURTH OBSERVATION.

Regular or not too frequent dejections, during ten days; afterwards diarrhœa; meteorism; stupor; delirium; death on *twenty-sixth day*. Patches hard; some ulcerated, others not so, throughout the whole length of the small intestine; smaller patches, not ulcerated, in the large intestine; liver soft; spleen large and extremely softened; all the mesenteric glands red and voluminous, especially near the cœcum.

AN ivory turner of extreme sensibility; æt. 23 years; born at Paris; having been married nine months, and having suffered from deep mortification from the commencement of that period, was admitted into the hospital of La Charité, November 1st, 1822. He said he had been ill during three weeks, and had kept his bed during the five previous days; had continued to work although less than common, during the fifteen first, after having been gradually losing his appetite during the three

previous months. In the beginning he had intense cephalalgia ; very great thirst ; complete anorexia ; considerable heat of skin and pain in the limbs. These symptoms continued, but the headache became much less after a considerable epistaxis, which came on, the seventh day ; the dejections regular or quite rare, during the ten first, were liquid and numerous after this period, and sometimes accompanied by pains in the abdomen ; chills alternating with heat, frequently during the last week ; and from the beginning the sleep had been troubled. He had had no pain at the epigastrium ; no nausea ; save two days before the entrance of the patient into the hospital, after having taken a glass of undiluted wine, hoping thereby to recover his strength. No pain in abdomen before the diarrhœa began. In addition to these symptoms, some pains in the throat and a slight cough came on during the last five days.

Nov. 1st. Face natural ; feeling of extreme feebleness ; no pain in the head ; at intervals pain in loins ; sleep disturbed by continual dreams ; somnolency during the day ; tongue natural at tip and in the middle ; whitish in other parts ; great thirst ; desire for cold drinks ; deglutition difficult ; redness of the pharynx, of the dependent part of the velum palati, and anydalœ ; dryness also of same parts ; gums bleeding on the slightest pressure, and this has been the case from childhood ; umbilicus a little tender on pressure ; the rest of the abdomen supple, and bears compression without causing pain ; twenty-five stools during the last twenty-four hours, accompanied by pains in the anus ; skin somewhat hot ; pulse a hundred, regular, sufficiently full ; respiration slightly accelerated ; cough not frequent ; almost no expectoration ; respiratory murmur a little clearer at left than at right, without any râle ; patient complains only of anorexia and diarrhœa.

(Sweetened barleywater, four times ; emollient fomentations ; gum potion ; venesection to § viij.)

Respiration became momentarily a little more free after the bleeding ; epistaxis twice ; two dejections also during the day ; in night slight delirium, and a copious sweat.

On 2d, no great sinking ; answers appropriate ; sight good ; hearing somewhat obtuse ; pulse a hundred and four ; skin rather hot ; abdomen not tender on pressure, even in the region of the spleen ; many rose colored lenticular spots on its surface. The blood drawn yesterday is not cupped, but is covered with a gelatinous buff, more than one line thick.

Same number of dejections as yesterday ; and during the night the patient walked about the ward with merely his shirt to cover him. On 3d, he did not remember his delirium of the night before ; his features were somewhat sunken ; his eyes injected ; his answers correct and rather rapid. He said he was very well ; his tongue was clean and moist ; his abdomen was meteorised and not painful on pressure ; skin was dry and warm ; pulse at one hundred and fifteen.

(Same ptisan.)

Delirium came on soon after the visit ; and on account of the extreme agitation under which he labored, the patient was confined to the bed by a straight jacket. On 4th, he did not know where he was, did not complain of being tied, and was perfectly indifferent to every thing that passed around him ; and answered only by "yes" and "no." His eyes were, as on the previous day, a little red ; much sordes about teeth ; his nose was besmeared with blood ; and he had, for the first time, subsultus tendinum. His tongue was gluey, and blackish, with a yellow coat upon it in some points ; abdomen meteorised ; the bladder prominent above the pubis, in consequence of a great quantity of urine in it.

(Cold infusion of cinchona ; enema of camphorated cinchona ; fomentations of aromatic wine ; potion with syrup and wine of cinchona ; blisters to legs.)

Delirium continued. On the morrow, in the morning, at six o'clock, the patient seemed seized with a kind of paralysis, with tendency to gangrene ; was almost wholly deprived of sensibility, and his face had a leaden aspect ; his pulse was felt with difficulty, and sometimes it was insensible ; the beating of his heart was tumultuous ; the subsultus tendinum less frequent than the day previous ; respiration hurried ; respiratory murmur without any râle in front ; speech unintelligible.

Some momentary returning of intelligence during the day ; involuntary dejections ; patient died at eight, P. M.

Opening of the corpse thirty-six hours after death.

EXTERIOR. — Greenish hue of the parietes of the abdomen.

HEAD. — Slight effusion under *arachnoid* ; a small spoonful of serosity, in each of the lateral ventricles. *Brain* but little injected, and of a good consistence ; the *cerebellum* and *medulla oblongata* were healthy.

CHEST. — Eight ounces of bloody liquid in each of the *pleura* ; some cellular adhesions of the right side. *Lungs* soft, a little more red than usual, otherwise well. *Heart* of a good volume, a little flaccid.

ABDOMEN. — *Æsophagus* well. Mucous membrane of the *stomach* of a violet hue, in the great cul-de-sac ; greyish throughout the remainder of its extent, and of a proper consistence. Subjacent cellular tissue infiltrated in its lower half.*

* I presume, from the manner in which the author uses this term, he means that half which is nearest the pyloric orifice of the stomach. — H. I. B.

Duodenum in a healthy state. The mucous membrane of *small intestine* was thin, easily detached, and throughout its whole extent were found very important lesions; to wit, 1st, *rounded elevations*, from two to four lines in diameter, and somewhat less in height; some of which were ulcerated; others not so. The latter occupied the first part of the intestine, and the mucous membrane on their surfaces was softened; and under it was found a *homogeneous substance*, of a rosy white, or slightly yellowish hue, from one to two or more lines in thickness, and situated in the cellular tissue. This substance, somewhat friable at its surface, became more firm nearer the muscular coat. The ulcerated pimples, or little elevations, presented the same structure; only the mucous membrane was gone from off their surfaces, and the substance which has just been described, was softer, where thus exposed, than on the parts which were not ulcerated.

2d. A great number of *yellowish elliptical patches*, more or less largely ulcerated, in the ileum; nearer to each other, and larger according to their proximity to the cœcum; they were of the same structure as the pimples already described, in the spaces between them; and were from two to three lines thick at their edges; less at their centres, especially near the ilio-cœcal valve. The substance, of which they were chiefly composed, adhered in this part of the canal to the muscular coat, whilst it was somewhat movable over the subjacent parts in the first portion of the intestine; and here the cellular tissue was not altered through its entire thickness. The muscular tissue was only a little thickened under the patches, which were near the cœcum. The patches with the pimples, or ulcerated elevations, occupied in the last fifteen inches of the ileum, two thirds of its surface. The *colon* contained a small portion of pultaceous fœcal matter. Its *mucous membrane* was

a little softened, but was easily raised, in long strips. From the cœcum to the sigmoid flexure of the colon, were a great number of *small flattened tumors*, not ulcerated. The number of these bodies became gradually less on approaching the last mentioned limit, and beyond it none were found; they were of the same structure as the pimples or elevations of the small intestines. The mucous membrane was simply more or less red, softened and thickened at their surfaces. All the *mesenteric glands* were large and red, especially in the neighborhood of the cœcum. The glands of the *mesocolon* were larger than natural. The *liver* flabby, greenish outside, pale inside; the bile in the *gall-bladder* was very liquid, clear and greenish. The *kidneys* were colorless. The *spleen* was three times its usual size; of a deep red and nearly putrid. The remainder of the organs were healthy.

If we examine this case with reference to the symptoms, or the state of the organs, it is worthy of attention. At the beginning, during six days, the patient had merely some simple febrile phenomena, without pains in the abdomen; without diarrhœa; without cough; without a symptom, in fact, which indicated that any organ was specially affected. After this first epoch, the stools, were liquid and numerous; there were some pains in the abdomen; five days after their first appearance the patient was obliged to go to bed; the delirium and meteorism did not appear until some time after, and at the opening of the body small round elevations, or ulcerated elliptical patches, were seen throughout the whole track of the small intestine, and of a structure different from what we have noticed before. Similar patches, but much smaller and not ulcerated, were in the large intestine. The spleen very large, and very much

softened ; the other organs were in a natural state, or were very slightly altered.

If from the moment the meteorism, the cerebral symptoms, and some others also, were added to the diarrhoea, there could be no doubt as to the nature of the affection ; if from that moment we must have anticipated the discovery in the small intestine of lesions more or less severe, similar to those which have been described in the preceding observations, yet we might have been in doubt until that period. Perhaps, too, the reader will ask, if these febrile symptoms, without diarrhoea, or pains in the abdomen, observed during the first ten days, were connected with the commencing alterations in the elliptical patches of the ileum. The affirmative to this question will not appear doubtful, when we remember that the most severe lesions were those of the small intestine ; that, at the period the diarrhoea appeared, the affection did not change in appearance, but that merely a new symptom was added to those previously existing, and also that such was the case when the delirium and the meteorism came on. We have seen likewise in one case, the dejections remain regular or of rare occurrence, as long a time, at least, as in this case, and the patient suffered only slight pain in abdomen, yet there was no well grounded doubt as to the cause of the symptoms. If, then, from the commencement of the affection until its fatal termination, all the morbid phenomena were dependent upon, or connected with this same lesion, it results that this can remain latent, during a considerable length of time, or at least give rise to no characteristic symptom.

It is remarkable, moreover, that although occupying the whole length of the intestine, the lesion of which we are now speaking, did not the less follow the course which we have

hitherto observed it to pursue ; that it was more extensive and more severe as it was nearer the cœcum ; that such also was the case with the mesenteric glands. If the alteration of the submucous cellular tissue was different from that which I have described in the previous observations, it nevertheless was found in all the patches where the mucous membrane was altered, so that in this case also it is impossible to say where the disease began ; whether in the mucous membrane, or the cellular tissue underneath it.

If the cœcum were, as is probable from appearances, the spot where the lesion of the small intestine began, it appears also to have been that of the elevations of the large intestine, which were nearer to one another according as the spot where they were found was more or less near the cœcum ; and probably they were developed about the time that those in the first half of the small intestine were, and they were like them not ulcerated.

What was the seat of the large pimples or elevation of the small intestine, and of the analogous patches of the large intestine ? We cannot decide this question rigorously. Analogy would seem to show these alterations to have arisen in the solitary crypts or glands, but this supposition has also its difficulties, as will be seen when treating, in a general manner, of the morbid changes of these glands.

Finally, and with this remark I shall terminate, the mucous membrane of the stomach was very nearly in a natural state, although for a long time previous to his acute disease, the subject of this observation had lost his appetite. Whence we must conclude that it is extremely difficult to appreciate justly the value of gastric symptoms, when they are limited, as in this case, to a simple derangement of function, when the patient, in whom we observe them, presents no other manifest alteration in health.

FIFTH OBSERVATION.

Fever ; considerable debility at the beginning ; then diarrhœa ; and afterwards meteorism ; delirium ; and death on *twenty-fifth day*. Numerous ulcerations in the ileum ; few in the colon ; mesenteric glands corresponding to the elliptical patches, altered, red, enlarged, and softened ; softening of the mucous membrane of the great cul-de-sac of the stomach.

AN unmarried female, æt. 20 ; of medium size ; of a moderately strong constitution, had been sick and at Paris during two weeks, when she was admitted to the hospital of La Charité, January 12th, 1823. At the beginning, headache ; violent chills, followed by heat ; thirst ; anorexia ; depression of strength. The headache continued ; the chills were repeated at irregular intervals every day ; the weakness increased very rapidly, so that the patient was obliged to go to bed on the third day, and has kept it since. She had diarrhœa, but at what time was not exactly known ; nausea, two days before her admission into the hospital, and finally, some vomiting of bile with worms in it, after an emetic. She had never been heard to complain of any pains whatever, save of those in the head. A slight cough commenced soon after the disease began.

On 13th, there was an appearance about the patient of depression ; of uncomfortable feeling ; of ennui ; continual drowsiness, and frequent change of posture ; at times she would lie across the bed ; her face was slightly flushed ; her senses perfect, and answers proper ; but the exercise of the intellectual faculties very fatiguing to her, her memory being naturally not very strong ; tongue moist ; clean at edges ; whitish at centre ; anorexia ; thirst somewhat troublesome ; deglutition easy ; abdomen very much meteorised ; not painful on pressure ;

covered closely, as is the chest, by lenticular rose colored spots, slightly elevated ; pulse small, sunken ; at one hundred and eighteen ; skin rather hot ; a dry, sonorous râle is heard in the right part of the thorax ; a mucous one at the left, nearly equally through the whole extent of the chest. The patient says she feels ill in every part of body. Venesection performed on the day previous, a short time after admission to the hospital, had produced amelioration of the symptoms.

(Sweetened barley water ; sweetened polygala ; fomentations of camomile flowers ; flaxseed tea enema ; blister to legs.)

Many dejections during the day ; delirium in night. On 14th, at morning visit, face was a little changed ; no stupor ; answers correct, but extremely slow ; somewhat less anxiety ; other symptoms as yesterday.

(Blister to chest.)

During the day she had many turns of vomiting of bile, in which were lumbrici ; one dejection. In night delirium ; and patient got out of bed. On 15th, patient appeared suffering from uncomfortable feelings and anxiety ; continual groaning ; frequent change of position ; her intelligence was, however, perfect.

(Ol. Ricin. $\frac{3}{4}$ i. ; enema of fern ; bouill. aux herbes.)

Frequent alvine evacuations without any worms in them ; slight restlessness in night. On 16th, drowsiness, disinclination for the exercise of the intellectual functions, more marked than usual ; various movements of the head from right to left, nearly all the time ; redness and swelling of the extremity of the nose ; tongue dry ; meteorism ; pulse small, contracted, at a hundred and sixteen ; rather frequent cough ; a dry, sonorous or slightly hissing (sifflant) râle is generally over the chest. Patient says she suffers every where, especially about her chest.

In the evening her face became flushed and excited. On 17th, it still was somewhat colored ; the nose was less swollen, and not so red as it was the day before ; the upper lip was thickened ; the lenticular spots on abdomen were nearly wholly effaced ; the sputa were viscid, one of them of a reddish brown color ; pulse much stronger than common ; the rest of the symptoms were as on the previous day.

(Blisters to thighs.)

The heat and dyspnoea becoming greater towards evening, venesection was performed with momentary relief. There was, during the night, violent delirium ; patient uttered loud cries. On the morning of the 18th, the face was more red than it was on the preceding day ; the drowsiness less ; the nose was red ; abdomen meteorised ; not painful on pressure ; nausea at times. Blood drawn was not cupped, but was covered with yellowish semi-transparent buff, soft, and from two to three lines thick.

The delirium was constant ; involuntary dejections on the next day. On 20th, at morning visit, the deafness, which had existed to a certain degree during several previous days, was extreme ; the middle part of the face was pale ; patient appeared as if suffering from uncomfortable feelings and pain ; speech unintelligible ; very great sinking ; constant delirium ; involuntary dejections ; blisters on legs nearly dry ; those of the thighs and of the chest bled a little, and suppurred plentifully.

(Infusion of cinchona with syrup of gum, twice ; tonic potion with wine and syrup of cinchona, āā ʒ ij ; fomentations of camphorated alcohol.)

The patient continued to have involuntary dejections and some nausea ; she was continually drowsy during the day, and

uttered loud cries during the night. The next day her appearance was very much changed, and she seemed as if her mind were wandering; her arm and forearm were rigid, and slightly flexed; frequent motion of head; respiratory murmur without râle, clearer at right than at left part of thorax.

On the morning of the 22d, the stiffness of the left arm continued; the pulse was nearly insensible; the respiration was somewhat accelerated; the respiratory murmur was, as on the day previous; the cornea was obscured, and the patient died at one, P. M.

Opening of the corpse nineteen hours after death.

EXTERIOR. — Blister on chest pale; those on the thighs somewhat red, without manifest thickening of the skin underneath them. Some marks as from blows with rods on the back; marbled patches, as large as the palm of the hand, near the lower part of the buttocks, surrounded by a yellow circle; underneath which the fatty cellular tissue had a deep hue of the color of onion-peel, but without any other sensible alteration.

HEAD. — No granulations upon the *arachnoid*; slight effusion under the membrane. One spoonful of clear serosity in each of the lateral *ventricles*.

CHEST. — *Heart* and *aorta* perfectly well. No effusion in the cavity of the *pleura*; *right lung* free; universal adhesions of that of *left* side. Both were of a vivid red; contained very little blood, and were soft, except at the apex of the right one, which was hepatised, for the space of two inches.

The *bronchia* were very red, otherwise natural.

ABDOMEN. — *Œsophagus* was well, save that, near *cardia*, there was a small tumor composed of a clot of black and hard

blood, confined in a very dilated vessel. The *stomach* was of its usual size. Its mucous membrane was covered, in its lower half, by a mucus which was slightly viscid. It presented to view many reddish bands, from three to four lines broad ; it was so softened in the great cul-de-sac, that we could not raise any strips of it ; it was of proper thickness and consistence in its pyloric half. The *duodenum* was natural. The *small intestine* contained a moderate quantity of mucus ; and throughout its whole length a rather large number of venous ramifications were seen, distended with blood ; along which its mucous membrane was red. This membrane was generally well, but near the cœcum, for the space of three or four feet where it was softened, it had numerous lesions ; 1st, many *reddish patches*, of irregular oval form, of small dimensions, formed by the thickened mucous and submucous tissues. 2d. *Other patches* that were larger and rough ; *elliptical*, situated opposite the mesentery, about one line thick ; *ulcerated*, of a greyish and yellowish color ; larger near the cœcum than in other parts. The last patches, the mucous membrane of which was destroyed, for the space of five or six lines, were formed principally by the development of a yellowish substance, which was friable at its surface, and became firmer underneath. It was formed in the substance of the cellular tissue ; was easily separated from the surrounding parts in some points ; and was entirely similar to that which has been described in the preceding observation. 3d. *Other ulcerations* much smaller, and with thin edges, appearing as if they had been made with a gouge. 4th, and finally, some *pimples* (boutons) ulcerated at their summits, more than one line thick, four broad, or nearly so ; having the same structure as the yellow patches. The mucous membrane of the *large intestine* was a little red in the transverse and descending colon ;

it was moreover of natural firmness and thickness ; it had in the right part of the colon many *ulcerations*, from one to three lines in diameter ; and in them was found either the submucous tissue, or a yellow substance, similar to that in the elliptical patches of the small intestine. The *mesenteric glands* corresponding to the ulcerations in the ileum, were very much enlarged and softened ; the others were very nearly natural. The *liver* was perfectly well ; the bile in the *gall-bladder* reddish and somewhat viscid, of a clear color. The *other viscera* presented nothing worthy of attention.

One of the most remarkable circumstances of this observation is, without doubt, the commencement of the disease. For, although on the third day, there were neither nausea, vomiting, diarrhœa, nor any other symptom which announced any important lesion, the feebleness of the patient was already so great, that she was obliged to keep her bed from that time ; and this circumstance must have induced any one to have anticipated a severe affection. The characteristic signs of the typhus became progressively more numerous, and in the midst of them, towards the last days of the disease, appeared some gastric symptoms.

At the opening of the body we found as the sole lesions, or very nearly so, a considerable softening of the mucous membrane of the stomach in its upper half ; ulcerations of various dimensions and characters in the last three feet of the ileum ; others similar but smaller in the right colon ; and a very considerable increase in the size of the mesenteric glands, which were red and softened in the neighborhood of the cœcum. That is to say, that if the characteristic symptoms of typhus fever were present, the lesions of the small

intestine were like those which have been described in the previous observations.

These lesions, moreover, seem to have pursued the same march, which we have seen them follow previously ; having commenced near the cœcum, where they were more in number, and more severe in degree, than in any other part. No others appeared of so long standing, so that, in this case, as in the others, the ileum must be considered as having been the principal seat of the disease, and source of the principal and first changes in the system of our patient. We could not, assuredly, attribute them to the mucous membrane of the large intestine, which, with the exception of some ulcerations, was well ; nor to that of the stomach, no symptom having occurred proving that to be affected, at the beginning of the disease. It is not certain that the lesion, of which it was the seat, had commenced even at the twelfth day of disease ; as the symptoms experienced at that period could be attributed to lumbrici, which were vomited at that time and afterwards.

SIXTH OBSERVATION.

Fever ; loss of strength ; pains in the abdomen during eight days ; then diarrhoea ; delirium ; sudamina ; and death on *seventeenth day*. Elliptical patches ; some ulcerated, others not so ; some soft, others hard in the last third of the small intestine ; mesenteric glands corresponding to this part, of a purple red ; enlarged, softened, filled with yellow points. Softening of nearly all the viscera.

AN unmarried female, æt. 19 ; at Paris during three past years ; of tall stature, with a large chest, and well devel-

oped limbs, and very strong constitution, fell sick July 3d, 1824 ; having been losing her appetite gradually during the previous fifteen days. At the commencement there was headache ; giddiness ; considerable diminution of strength ; patient was obliged to give up every kind of work ; hearing dull ; pains in abdomen ; anorexia ; intense thirst ; increased heat of skin. These symptoms continued ; the deafness increased ; and on the eighth day, supervened diarrhœa ; drowsiness ; delirium, which last was nearly constant up to the time when the patient entered the hospital on 17th, on fifteenth day of the affection. Leeches to the epigastrium and anus ; emollient cataplasms upon abdomen, had been used from the first, and patient had been subjected to a rigid diet.

The delirium having been very active during the night of 17th to 18th, the straight jacket had been applied.

18th. At the morning visit, she had a wild air ; her face was red and bluish ; the forearms were half flexed, and at first it was impossible to extend them ; afterwards it was quite easy to do so ; and again they became stiff, after the lapse of some minutes ; tongue gluey ; of a bright rose color ; seen with difficulty ; abdomen soft ; supple ; of natural form, and covered with large sudamina ; skin very hot and dry ; pulse somewhat full, more than one hundred and fifty per minute ; percussion of chest sonorous ; the respiratory murmur was without râle in front.

(Whey ; lemonade ; flaxseed enema, twice ; venesection to § viij. ; blisters to legs.)

Venesection was performed with difficulty, in consequence of the resistance of the right arm to the necessary extension. Soon afterwards, the pulse became quicker, more hurried and smaller than before ; the respiration more accelerated. The patient had many dejections colored red ; she recovered her

intelligence during the day ; and died at four, A. M., on the next day, after having conversed with the nurse.

Opening of the corpse twenty-eight hours after death.

EXTERIOR. — A moderately thick layer of fat under skin ; muscles were of a good color, not sticky, and firm as usual. The right cephalic vein had been pierced through, and the orifices were still open.

HEAD. — *Arachnoid* perfectly healthy ; none of Pacchioni's glands were seen upon it ; there was a slight effusion under certain parts of this membrane ; two small spoonfuls of serosity in the *left lateral ventricle* ; one in the *right*. The *pia mater* was somewhat injected ; the *cortical* substance of the brain was of a light rose color, especially at the upper part of the brain ; in the *medullary* were a number of bloody points ; both were of a good consistence. The *cerebellum*, *medulla oblongata*, *medulla spinalis*, had nothing in them remarkable.

NECK. — The *pharynx* and *amydalæ* were in a natural state ; the *epiglottis* and *larynx* were of a greenish hue ; the *trachea* and *bronchia* were somewhat red.

CHEST. — The *heart* was of a good size, pale, of extreme softness, easily torn, and it contained a little fluid blood. The walls of the left ventricle thinner than usual. The *aorta* was of a deep red color, like that of the blood which it contained. The *left lung* was adherent to the *pleura costalis* by a red cellular tissue ; *pleura* otherwise was healthy. The lung itself was natural anteriorly, flabby and heavy at its posterior and lower parts, and of a blackish red outside and inside. Its tissue was apparently homogeneous ; it presented more resistance to the pressure of the finger than a hepatised part, but less than one perfectly healthy ; and from the surfaces of the incisions flowed copiously a quantity of dark red fluid, and which was

not frothy. The *right lung* had nothing remarkable in it, save a little congestion of blood in its posterior and lower portion.

ABDOMEN. — The *œsophagus* was partly deprived of its epidermis, but was otherwise in a natural state. The *stomach* was of medium size, and contained a small quantity of bile. Its mucous membrane in its upper half had, near the cardia, a redness covering four inches of surface; likewise some rose spots, more or less narrow, with partial thinning of the membrane, some softened, others not. It was greyish and perfectly healthy near its pyloric half. The *duodenum* was natural. The *small intestine* contained a moderate quantity of bile and mucosities. Its mucous membrane was white, and of its wonted thickness and firmness in its last [first?] two thirds; it had farther onwards some red spots in it, and at intervals it was less firm than usual. It was red, and had not the least consistence near the cæcum, for the space of one foot. The *elliptical patches* of the ileum were more or less seriously altered, except in its first quarter. Those nearest the *jejunum* were red like the others; some of them were ulcerated; all were more or less prominent, in consequence of the mucous membrane, which was red, thickened, very much softened, and by the submucous cellular tissue not less red and thickened. In the last foot, these patches, ten in number, were very greatly *ulcerated*. They were about one and a half lines thick, had rough yellowish surfaces, and were composed chiefly of the material which has been described in the two preceding observations. This material had a yellow or red tinge; its consistence varied; it could be easily separated from the muscular tissue, which was only a little thicker and more colored in this point than it was in others. Having become somewhat softened where exposed, this material of the patches had

been partially destroyed in some parts, and this was the cause of the roughness of the surface already mentioned. The mucous membrane of the ileum was entirely gone around its whole circumference, near the cœcum, and for an inch in breadth; the cellular tissue corresponding to this part was red and thickened, but did not present the least traces of the yellow material found in the patches. The *large intestine* contained a moderate quantity of yellow pultaceous fœcal matter. Its internal membrane was pale; of its usual thickness, and gave strips about one inch and a half long, that is to say, a little longer than in the cases, where it seems to be perfectly healthy. The cœcum had in it some small *ulcerations* of a yellowish hue, and very thin, although they were in a substance analogous to that of the ulcerated patches of the same color, found in the small intestine. The *mesenteric glands* corresponding to the ulcerations were of a violet red, enlarged, very much softened, and contained many yellow points, purulent as it were. The *liver* was somewhat pale; extremely flabby; it was dry internally; the bile of the *gall-bladder* was clear, sufficient in quantity, and contained a hundred small grains of a yellow substance, which yielded to the slightest pressure; the *spleen* was of three times its usual size; of a deep violet red color, and could be easily reduced to a pulpy matter. The *kidneys* were much less consistent than usual; their *tubular* substance was of a violet red; the *cortical* pale. The *ovaries* contained many serous cysts; the *other organs* had nothing remarkable about them.

Although there was no meteorism on the day I first examined the patient, there could be no doubt about the character of the affection, at this epoch, when we considered the succession of symptoms, the slight pains in the abdomen, which were ex-

perienoed during the first eight days, the diarrhœa which supervened, the state of the features and the sudamina. And of all the lesions, those of the small intestine were, in fact, the most severe ; without doubt the earliest, and perfectly similar to those which have been observed heretofore ; they were more marked and extensive in the neighborhood of the cœcum than any where else. So that in this case, as in the others, the first symptoms can be attributed solely to the commencing disorder in the ileum. It is, moreover, quite worthy of notice that the mucous membrane of the large intestine was perfectly healthy, save that it had some small ulcerations in it, and therefore the diarrhœa can hardly be referred to any thing except the state of the mucous membrane of the small intestine.

Although the lesions of this canal will explain nearly all the symptoms, the state of the heart, lungs, liver, spleen and kidneys must not be omitted in the enumeration of the causes of death. All these viscera except the lungs were, in fact, more or less softened. We can easily understand how the functions of the heart must have been altered, when the softening of the organ became so great as it was. The functions of the spleen, also, whatever they are, could not have been less altered. The secretion of bile must have been much deranged, so that these different softenings, although secondary, because they do not exist in all the cases, and commence at indefinite epochs, evidently contributed in the acceleration of the fatal termination. This case is more remarkable, from the circumstance that no error of diet was committed, and with the exception of the abstraction of some blood, the disease had been left entirely to itself, and it was not the less promptly fatal.

Can we believe that the diminution of the appetite, previous to the febrile symptoms, was connected with a peculiar and

appreciable affection of the mucous membrane of the stomach, to the atrophy, with or without softening, which was observed in certain points? Shall we believe, on the contrary, that it was independent of the organic affection? This question, it seems to me, cannot be solved in a rigorous, or even probable manner, since we have seen, under somewhat different circumstances, the appetite less, and for some time before absolute illness, and this in a patient, the mucous membrane of whose stomach was almost perfectly healthy. (Observ. 4th.)

The following observation, the last of this series, will present complications which we have not met with in the others.

SEVENTH OBSERVATION.

Fever; depression of strength; tendency to sleep; absence of pains in abdomen; and diarrhoea during first days; then diarrhoea; meteorism; stupor; delirium; death on the *twenty-eighth day*. Ulcerated patches of two kinds in the ileum; mesenteric glands corresponding to them red, enlarged and softened; false membrane upon the pharynx and larynx; destruction of the upper part of the epiglottis; softening of the mucous membrane of the stomach, &c.

A CARPENTER, æt. 25; at Paris four years; not accustomed to excesses of any kind, and of a strong constitution, was admitted to the hospital of La Charité, July 16th, 1826, having fallen sick twenty days previously. At the commencement, chills, followed soon by heat; dull headache; feebleness; disinclination to labor; drowsiness; much thirst; diminution of the appetite. These symptoms continued, and some bleedings from the nose took place during the first week. July 2d,

increase of headache ; pains in the loins ; dejections not frequent ; patient was obliged to go to bed. Dejections were made more numerous by the administration of purgatives on 5th and 6th, and from that time diarrhœa continued. The somnolency increased from 12th to 15th, and delirium began for the first time on this last day. Although the skin was more hot than natural, the patient felt cold, and kept near the fire ; he had likewise some accesses of sweating. Thirty leeches were applied on 4th to the epigastrium, which, like the other parts of abdomen, was not painful on pressure.

17th. Expression of astonishment ; stupor ; dull headache ; patient feels as if embarrassed in head ; slight pricking sensation in the eyes, for five days before ; hearing somewhat less acute than usual ; answers slowly given, confused ; often incomplete ; memory slow, although it was exact ; movements of body annoying ; tongue dry, rough, protruded imperfectly ; anorexia ; intense thirst ; abdomen slightly meteorised ; not painful on pressure ; rose colored lenticular spots rather numerous upon its surface ; four dejections during the day ; pulse moderately large and full ; at a hundred and four, with a slight double beat ; skin quite hot ; respiration frequent ; a dry, sonorous and sometimes squeaking râle was heard.

(Sweetened barley water ; emollient enema ; emollient fomentations ; blisters to legs.)

Frequent dejection ; the somnolency during the day was constant ; delirium during the night. On the morning of 18th, the stupor was the same as it was on the preceding day ; the blisters had not been applied, and twenty leeches were ordered to the neck.

The patient lost much blood ; passed his urine many times involuntarily ; and was continually muttering in a low tone during the night. At the hour of visit, on 19th, his state was

not materially altered ; the left eye was red ; the lower lip trembling ; the pulse at a hundred and twenty-four. The drowsiness was constant ; the prostration increased during the day, and on the morrow, the 20th, besides sinapisms to limbs, eight pounds of ice were applied to the head.

The face was of a purple red during the whole period of this application. In the evening the patient recovered momentarily his consciousness, and answered some questions ; the urine was discharged involuntarily, and, as on the previous day, there was no dejection. On 21st, eyelids nearly always closed, and separated with difficulty ; trembling of the lower jaw ; continual grunting ; abdomen more meteorised than the day before ; lenticular rose colored spots gone ; pulse a little irregular ; beating of heart dull ; cough not frequent.

The cough increased a little during the day ; the muttering continued constantly, and the lower jaw was continually in motion.

On the morrow, continuance of the same symptoms, increase of the meteorism ; pulse sufficiently regular and resisting pressure ; skin warm. Respiratory murmur heard, mingled with a loud, large, vibratory râle on the right side.*

(Bath.)

Nausea and efforts of vomiting after the bath until night. On the morning visit of 22d, the patient was in the agonies of death ; the head was thrown back at every respiratory movement ; he trembled all over his body ; and notwithstanding his pulse was somewhat large and regular ; the pulsations of the heart were sufficiently strong.

* By this term as used in this place and previously, Louis meant the right half of the thorax, and he does not restrict the word side to that portion of the chest lying immediately under the axilla ; but applies it to the whole of what lies on either side of the vertebræ or sternum. — H. I. B.

He died on the same day, at seven, A. M., after having shivered or trembled until the last moment.

Opening of the corpse twenty hours after death.

EXTERIOR. — Emaciation slight ; stripes upon the sides of trunk, as if made by blows from rods ; abdomen very tense and meteorised.

HEAD. — Granulations on the *arachnoid* were extremely rare, near the longitudinal sinus ; traces of effusion underneath the *arachnoid* ; two small spoonfuls of serosity in the lateral *ventricles* ; five to six in the inferior occipital fossæ. *Pia mater* slightly injected ; *cortical* substance of a pale rose color ; *medullary* had some bloody points in it ; both were of a good consistence. The *cerebellum* was in the same state as the brain.

NECK. — Ecchymoses among the infra-hyoid muscles ; *cervical glands* red, voluminous. There was a false membrane, thin as the epidermis which covers the œsophagus, upon the *pharynx* and *larynx*, immediately below the last of which it could not be found ; it was easily raised ; and was sufficiently firm when considering its thickness. The *epiglottis* was destroyed at its superior edge, for the space of two lines ; the mucous membrane was of a rose color, somewhat thickened about it, and separated from the subjacent tissue for the space of from one line to a line and a half about the edges of the portion destroyed.

CHEST. — The *heart* was of medium size ; its right ventricle was empty and somewhat soft ; the left was nearly as firm as in health, and contained a fibrinous clot that was easily torn. The mitral and aortic sigmoid *valves* were of a somewhat deep amaranthine red color ; the *aorta* was of a vivid

red, at its origin ; of a rose color afterwards. The *right lung* adhered to the pleura costalis, throughout its whole extent ; the *left*, in a part only. Both were large and collapsed but little, were more dense than natural ; were of a deep red color, posteriorly ; of a clear red, anteriorly, and this color existed in the substance as well as upon the surface ; otherwise they were healthy, and contained only a small quantity of liquid which had but very little, if any, air in it.

ABDOMEN. — The *oesophagus* was yellowish, and stripped of its epidermis. The *stomach* was a little larger than in health, and along the small curvature were *lymphatic ganglions* of a violet color, about the size of filberts ; and in its cavity was a small quantity of yellowish, slightly opaque fluid. Its mucous membrane had a bistre hue, and had some spots which were somewhat thinner than the adjacent parts ; it had no mucous upon its upper half, but much of it upon its lower, where it was greyish and reddish, mamelonated and somewhat thickened. Everywhere, save in the neighborhood of the pylorus, and along the small curvature, where it was healthy for the space of one inch, it was softened so much as to give strips of only from one to three lines long. It had also upon the posterior face two small *ulcerations*. Excepting a slight enlargement of the glands in it the *duodenum* was healthy. The *small intestine* was of considerable size, contained foetid gases and some mucus. Its internal membrane was thin and pale throughout its whole extent ; it had, near the duodenum, for the length of two feet, a moderate degree of consistence ; but it was very much softened afterwards, so that it afforded strips of two lines in length only. The *elliptical patches* that are often difficult to find when in a healthy state, were seen at first sight ; they were, in the last three feet of the ileum, of a pale rose color, or vivid red, and were more or less thickened,

The red patches offered, in addition to their general thickening, one or many smaller eminences, from three to four lines in diameter, of an intensely red color, or of a yellow hue. The mucous membrane was softened and thickened on the surface of the first; entirely destroyed on the second, whose color was owing to bile. Both were formed of a homogeneous substance, which was whitish, or slightly colored with a rosy hue, like that which has been described in the preceding observations, it was more or less friable, at its surface, but became firmer, as it was nearer the muscular coat. These eminences, placed on the surface of the patches, were not the only ones, but others were observed perfectly similar, in the intervening spaces. Finally, the mucous membrane was irregularly swollen, or puffed up, in parts near ilio-cæcal valve, throughout the whole circumference of the intestine, for the width of an inch, and in the subjacent cellular tissue, which was irregularly thickened, was found some of the substance above described. The *large intestine* was of very considerable size, and contained, in its first third, a small quantity of fœcal matter; after which hardly any traces of fœces were found. Its mucous membrane was of a vivid red color in the cœcum, greyish throughout the rest of its extent, and was a little thicker than natural; it was of a good consistence in its middle third; a little softened at its two extremities, where could be raised strips of from five to six lines in length. Throughout its first three quarters, there was rather a large number of blackish points, seen in the centres, of as many lenticular, greyish or reddish crypts, which remained adherent to the submucous cellular tissue, when the mucous membrane was raised. The *mesenteric glands* were of considerable size, especially near the cœcum, where they were more or less red; very much softened, and of the size of hazle-nuts or filberts. The *glands* of

the *mesocolon* were proportionably much less enlarged. The *liver* was voluminous, very flabby, although it was as difficult to tear it as when in the healthy state ; the bile in the *gall-bladder* was red, very liquid, turbid ; the *spleen* had the color of dregs of wine ; was very much softened ; the *pancreas* was firmer and larger than usual ; the cortical substance of the *kidneys* was streaked with deep red lines ; the *ureters* were double their usual size ; the *bladder* was distended by an abundant quantity of urine, but was otherwise healthy.

Like the subject of the fifth observation, this one of whom we have just given the history, had neither pains in the abdomen nor diarrhœa during the first period of his disease ; but he experienced from the beginning, considerable weakness, a tendency to sleep, which made rapid progress. Soon, all the most grave symptoms of typhoid fever manifested themselves, and after death the small intestine did not present less extensive nor less characteristic lesions than in the preceding case, so that the reflections made upon this last, apply naturally to the present one. Moreover, there were between these two cases remarkable differences with reference to the secondary lesions.

To begin with the large intestine ; its mucous membrane was slightly softened at its two extremities, and notwithstanding its extreme distention, was a little thickened. This thickening, which did not seem to be caused by inflammation, and existed, under analogous circumstances, in one of the patients whose history we have given, (Observ. 2,) had probably, in this case, a similar origin. We regret much that the thickness of the muscular coat was not distinctly stated, as this thickness, if it had been more than usual, would have removed all doubts upon the subject.

The false membrane of the pharynx extended to the larynx, but not beyond it, and was a little more dense, upon the first of these organs, than upon the second. It consequently had followed, in its development, the succession which is observed in the most simple cases, when it is formed primitively in healthy subjects. We notice this as a proof of the uniform course which nature pursues in this affection.

The absence of all characteristic symptoms indicates sufficiently, moreover, that it was the product of the last days of life ; and the chills which occurred two days before death, probably marked its commencement.

The destruction of the epiglottis which, as we shall see hereafter, is one of the most remarkable secondary lesions of the typhoid affection, caused no peculiar symptom, and without doubt, because of the reasons I have just enumerated, why the false membrane of the pharynx likewise did not cause symptoms.

The softening of the mucous membrane of the stomach, certainly not of quite so recent a date as this last, was in like manner latent ; and these lesions joined to the preceding, to the softening of the spleen, the extreme flaccidity of the liver, form a collection of morbid changes more than sufficient to explain, when united to those of the small intestine, the death of the patient.

If now we throw a general glance over the preceding observations, we see that to the same order of symptoms (those of severe continued fevers, typhoid, or ataxic fevers) a similar lesion answered constantly ; that, if in the very great majority of cases the first symptoms appear in the abdomen, the gravest, most important, doubtless the earliest, and in some cases, almost the sole lesion, was *always* in the small intestine ; whose elliptical patches were more or less seriously changed in

structure in the part of the ileum nearest the cœcum. We see also that, in these cases, where this morbid change extended to all or nearly all the patches of the intestine, it was more severe and more marked, in the neighborhood of the ileo-cœcal valve, than any where else. From these facts, we are led to admit that it began in this point, and extended afterwards towards the duodenum, to a greater or less extent; very nearly as we see tubercles in the lungs develop themselves, successively from the apex to the base of these organs.

Between the symptoms and lesions, of which we now are treating, the relation seems to me to be not less evident than that which is observed between those two orders of facts as they take place in other affections; pneumonia, for example, and if this were always the case, the question, relative to the seat of the disease, in the present case, would be answered. But the relation between them is not always as evident, and it is one of the principal causes of the differences of opinions which still exist among physicians, with reference to febrile affections.

Another cause of difference of opinion is the following. As the victims of the typhoid affection succumb generally, at a period which is more or less remote from its commencement, it has been thought that the alteration of the elliptical patches of the small intestine may be only one of the somewhat remote *consequences* of the affection, which we must admit is the case with other lesions, which I have called secondary, for this very reason. And, although this opinion does not agree with the greater part of the preceding facts; it may seem correct in the view of some persons who have examined with care, cases similar to some of those which I have reported, in which we found no pains in abdomen, nor diarrhoea at the beginning of the affection, and this, for a considerable space of time.

(Observ. 2.) We must then give a new series of facts, and this is the reason why I have determined to lay before the reader the following, which refer to individuals, in whom the disease proved fatal in a few days. For, if in this new series, the lesion of the elliptical patches of the small intestine be the only constant one, if it be the same as in those that precede, whatever may be the symptoms at the commencement, we must admit that it is intimately connected with the nature of the affection, and commences with it. Of this the reader will soon be able to convince himself.

CHAPTER II.

OBSERVATIONS RELATIVE TO PATIENTS WHO DIED BETWEEN THE EIGHTH AND THE TWELFTH DAYS OF DISEASE.

EIGHTH OBSERVATION.

Pains in the abdomen from the commencement ; dejections rarely, or constipation ; constant very severe headache ; sensations as if eyes were dazzled ; very great and sudden depression of strength ; affections very strongly developed ; death on *twelfth day*. Ulcerated hard patches in the ileum ; mesenteric glands corresponding to them of a pale rose hue, very large and very much softened ; spleen of double its usual size, and softened ; commencement of inflammation of the lungs ; two thalami nervorum optictorum of different degrees of consistence.

A WOMAN, æt. 29, with fair hair and rather tall ; of a moderately strong constitution ; and who had resided almost always at Paris during the previous six months ; fell sick October 21st, 1823 ; having experienced, for some time, much anxiety in relation to her own future welfare and that of her children. The catamenia, which had never been regular, had been sup-

pressed a short time after her arrival at Paris, but had re-appeared slightly two months previously to her entrance into the hospital.

In the beginning chills; headache; pains; stiffness of limbs; anxiety; strange and unpleasant thoughts; thirst; anorexia: nausea; colics; and, at a later period, sometimes cough. The thirst increased, the heat of skin was very great, and sometimes alternated with chills; the headache increased daily; sleep was troubled by unpleasant dreams; the colics ceased on the fourth day of the affection; the dejections were few in number or irregular; there was neither diarrhœa nor delirium, but simply a sort of embarrassment in the exercise of the intellectual functions. During the night of 27th to 28th, which followed the time of admission of the patient into the hospital, she was very restless. Two venesections, made on 26th, had been followed by a momentary amelioration only. Leeches, applied to the anus before this period, had not had the least success, and during the first three days, the patient had taken, for the alleviation of her colics, sweetened wine, but without any appreciable advantage or inconvenience.

On the morning of 28th, face sufficiently natural; answers clear; memory exact; pains in the limbs and loins; very severe headache, so severe during the night that the patient was in despair. Eyelids strongly closed; buzzing in ears previous twenty-four hours; considerable weakness; motions difficult; indifference of manner; appearance and attitude that of one regardless of her situation; patient could be uncovered without any notice being taken of the exposure. Tongue natural at edges, yellowish at the centre; mouth pasty and bitter; very intense thirst; throat dry; abdomen soft, slightly meteorised, somewhat sensible to pressure over its whole extent; constipation six days; ardor urinæ for two

days ; respiration very slightly accelerated ; no kind of râle ; pulse active, not large, nor hard, at one hundred and sixteen ; skin moderately warm ; the patient assured me that she did not feel cold.

(Solution of simple oxymel, three times ; gum potion.)

Two dejections, and some few turns of vomiting of a mouthful of bile during the day ; and during the night she often lamented, and spoke of the danger of her situation. On the next day, 29th, she arose frequently up in bed, and bent forward upon her knees, in the attitude of a person annoyed or in a bad humor ; but dared not leave the bed in order to satisfy the necessities of nature, through fear of the tottering manner in which she walked. The other symptoms were the same as those of the preceding days.

She said nothing during the day, and fell, in the night, when attempting to go to the close-stool. On 30th, immobility of features ; looked steadily upon one object ; decubitus dorsal ; slight deviation of the mouth towards the right side. The patient said she had passed a very miserable night, dreaming continually of her little daughter ; pulse sufficiently strong, regular, at a hundred and ten ; tongue was not at all turned towards the right. She asked to be bled.

(Venesection to § x.)

Blood covered by a gelatinous looking, greyish, soft, semi-transparent buff ; obstinate silence ; deglutition difficult during the night. On 31st, at morning visit, patient still completely taciturn ; face pale, covered with sweat, as if she were moribund ; her arms, left to themselves, fell as if paralyzed ; pinching of the flesh did not seem to be felt ; pulse very small and very feeble.

(Twelve leeches to ears ; six pounds of ice upon head ; sinapisms to lower extremities.)

Almost immediately after the fall of the leeches, the paleness of the countenance disappeared, the cheeks became successively more flushed; the sensibility re-appeared, the patient pronounced some unintelligible words. A short time afterwards she made more clear remarks, had a more natural aspect; remembered having been pinched, and declared that if she did not withdraw her limbs at that time, it was because she had not sufficient strength. Her arms continued still somewhat stiff; she pointed always to her head as the seat of her trouble; desired death; spoke only of being anxious to die, though she regretted leaving her husband; right pupil larger than the left; pulse of the same side fuller than that of the other; tongue dry and pale; urine involuntary.

Dec. 1st. Face colorless, and covered with sweat; moderate stiffness of the two arms; pulse at one hundred and eighty; pupils insensible to light; death at noon.

Opening of the corpse twenty hours after death.

EXTERIOR. — No very marked emaciation; back of a violet color; muscles healthy.

HEAD. — *Arachnoid* natural; no effusion beneath it. A small spoonful of serosity in each one of the lateral *ventricles*; two spoonfuls of the same fluid in the lower occipital fossæ. *Pia mater* very much injected upon the lateral parts of the brain. *Medullary* substance of good consistence, presenting many minute points of blood when cut. Right *thalamus* a little less firm than the left.

SPINE. — Two spoonfuls of serosity at its lower part. Spinal marrow perfectly well.

NECK. — The *epiglottis*, the *larynx*, and the *trachea* were natural.

CHEST. — *Heart* and *aorta* healthy. *Lungs* free from

adhesion, and presented no remarkable appearance at their front part ; they were of a violet red color behind. In posterior portion of left, was a part in the first stage of inflammation. The right was firm, but was neither congested nor hep- atized, but was, as it were, carnified in this same part.

ABDOMEN. — *Œsophagus* healthy. *Stomach* of small vol- ume, containing a moderate quantity of viscid liquid. Its in- ternal membrane had many red points in several places, was of a velvety feel in the great cul-de-sac ; slightly mamelonated, and of a pale rose color in other parts, save within the three inches nearest the pylorus. It was of good consistence and thickness throughout its whole extent. The *duodenum* was reddish, without any other alteration. The *small intestine* contained a moderate quantity of mucosity. Its mucous mem- brane was pale through the greater part of its extent, generally of good consistence and thickness. It had in the last third, a rather large number of crypts, or isolated glands, about which it was softened, and broke easily on being raised, but was not thickened. In the last eighteen inches of the ileum, opposite the mesenter-y, were seen fourteen *flattened tumors* from four to ten lines large, at their greatest diameter ; they were yel- low, *ulcerated* at their centres, from two to four lines in extent ; being more so as they were nearer the ilio-cæcal valve ; and over the remainder of their surfaces, the mucous membrane was red, thickened and softened. These tumors, about three lines thick, were principally formed of a substance which had a color between red and yellow, like that which has been des- cribed in many of the preceding observations ; traversed in some points by lines of a deep red color. This substance was of firm texture, save in those patches which were most largely ulcerated, where it was a little softened, and could be easily separated from the surrounding parts, leaving expos-

ed a very thin stratum of cellular tissue. This latter was one line thick and œdematous near the patches. The *large intestine* contained a small quantity of pultaceous fœcal matter, of a greenish yellow color ; and its mucous membrane was perfectly healthy throughout its whole extent. The *mesenteric glands* corresponding to the ulcerations were about the size of filberts or a little larger ; were of a very pale rose color, and extremely softened. *Liver* healthy ; bile in gall-bladder reddish and very fluid. *Spleen* of double the usual volume, and softened. *Kidneys* somewhat red ; *bladder* healthy. The right *ovary* had the size and form of a hen's egg ; was transformed into a fibro-serous cyst, which contained a thick, turbid, whitish and yellowish liquid, in which floated six fragments of a granulated, soft substance like white honey.

Although the duration of the disease was twelve days only, the lesions of the small intestine, except that they were not of so severe a character, were exactly the same as in the preceding cases, and as in those, they were more severe, and more extensive near the cœcum than elsewhere. The increase in volume, and softening of the mesenteric glands followed the same law. In addition to the diseased appearances in the patches was a remarkable development of the solitary glands, throughout a considerable extent. The mucous membrane was softened immediately around, but otherwise it was perfectly healthy. This shows that the red or white softening of this membrane, observed over a greater or less extent of surface, is accessory, consecutive, non-essential to the typhoid affection ; for, unless this were the case, it would exist in different degrees, at every epoch. The same may be said in regard to the mucous membrane of the stomach, which was found very nearly healthy, also to that of the large

intestine which was perfectly well. So that this observation proves two things ; to wit, 1st, the affection may be very rapidly fatal, without the lesions of the elliptical patches of the ileum being less marked ; and 2d, the other lesions of the mucous membrane of the stomach and intestines, of whatever nature they may be, are merely accessory, may or may not exist, the principal characteristics of the disease remaining the same

Although I have omitted to notice the presence or absence of some symptoms, which are not without importance in the diagnosis of typhoid fevers, (the lenticular rose colored spots, the sudamina, epistaxis) ; although others which are found almost constantly and closely connected with this disease, failed to appear (the diarrhœa) ; although, on the contrary, one of these which generally disappears the soonest, was the most obstinate and violent, and appeared more severe than all the others (the headache) ; nevertheless, the mass of the other symptoms, coinciding only with those of the affection, we are now studying, its diagnosis was quite sure. If the diarrhœa was absent, there were from the first day of the disease, pains in the abdomen ; about the same epoch, the intellectual faculties became somewhat altered ; the feebleness, one of the gravest and most characteristic symptoms of the typhoid affection, had made rapid progress ; there had been buzzing in the ears, slight meteorism and some stupor ; it was therefore impossible not to recognise the affection. And nevertheless, as I have above stated, how much did her state, with reference to her sensations, differ from that which we observe ordinarily ! The pain in the head was so severe that the patient was in despair and desired death,—yet headache troubles but slightly or only for a short time, the greater part of the patients sick of typhus fever. Her affections were not less acute than this sensibility to pain, inasmuch as, even in her dreams, she

thought of her children, and regarded death as painful only because she was to be separated from her husband.

With regard to the weakness, it increased to an extreme point, and for a time had the appearance of paralysis, so much so that the patient, though she experienced some sensation when pinched, could not withdraw her limb. This is a remarkable fact, and proves, in my opinion, that the pain was slight, otherwise the patient would have made some grimace, uttered some cry, expressed some suffering. It is the only fact of the kind I ever observed; the other patients, whose feebleness arrived to such a degree, having not recovered the use of their intellectual faculties, and consequently were not able to say whether or not they had suffered or felt at all when pinched.

What was the cause of this severe pain in the head, of this great debility? They could not have been produced by the lesions, found either in the brain itself or its membranes. The injection of the pia mater was not greater than is observed, in other cases, in which no similar symptoms are found. Experience has not shown, moreover, that we can regard the slight softening of one of the optic thalami as the source, either of severe headache or extreme feebleness. And as the most severe lesions were those of the small intestine, it is in these lesions, or in other causes which have produced this affection, that we must seek for an explanation of these symptoms. Perhaps they were dependent upon both causes, but we shall examine this question at some future period.

The state of the organs did not afford a very satisfactory reason for the death of the patient. The morbid changes in the elliptical patches of the small intestine were neither numerous nor large; the remainder of the mucous membrane of the alimentary canal was very nearly in a healthy state, and the alterations in the spleen and lungs were slight.

NINTH OBSERVATION.

Fever; diarrhoea; anorexia at the commencement; afterwards violent delirium; profound taciturnity; death at the beginning of the *tenth day*. Elliptical patches in the ileum red, softened; some ulcerated, others not; mesenteric glands, corresponding to ulcers, red, enlarged, very much softened; slight softening of different parts of the mucous membranes of the stomach and cæcum; considerable softening of the spleen, liver and kidneys.

A SWISS, æt. 20, of medium size, strong constitution, with a large chest and well developed limbs, fell sick February 9th, 1826. At the beginning, violent chill followed by heat; diarrhoea; anorexia. These last symptoms continued; and the patient was confined to his bed, on the fourth day after their first appearance, and was brought to the hospital of La Charité, February 14th; had much restlessness during the following night, so that the attendants were obliged to have recourse to the straight jacket.

On the next day, 15th, perfectly calm; decubitus dorsal; face slightly colored; somnolency; slight stupor, and sometimes features nearly natural; answered questions, and sometimes made spontaneously very correct remarks; headache; sight a little dimmed; tottered when upon his feet; frequent inclination to sleep. When I asked of the patient whether he dreamed during these periods, he cried, "yes, and I thought of my fate." Tongue dry, thickly coated, somewhat red in centre; intense thirst; easy deglutition; abdomen of natural form, sensible to pressure in right iliac fossæ; liquid and frequent dejections; pulse regular, at a hundred and one, moderately full; skin quite hot; lenticular spots upon abdomen; respiration a little accelerated; respiratory murmur mingled with a little mucous râle, was more feeble at left than at right. Im-

mediately after this examination the patient seemed to lose his reason.

(Venesection to § xv. ; lemonade.)

Great restlessness ; violent delirium during the day, and in consequence of it, the straight jacket was again applied, and kept upon him until the following morning ; then the face was of a rather vivid red color, and had the appearance of one entirely occupied by something different from what was going on around him, or as if his mind were wandering ; he maintained an obstinate silence ; tongue, same, protruded unwillingly ; pressure on the abdomen did not excite the least distortion of face.

(Twenty leeches to ears ; eight pounds of ice upon the head.)

The delirium continued with the same violence ; the ice was retained on the patient's head with great difficulty, and he himself was restrained with much trouble when his bed was being made. He refused every kind of drink, passed his urine in bed, and sweated copiously during the night. On 17th, face deeply altered, of leaden hue ; copious sweating ; pulse at a hundred and forty ; respiratory murmur strong and without the least râle, either in front or on the side.

The same remedies (with the exception of leeches) were continued ; the state of the patient became worse and worse ; and he died the next day at three, A. M. on the tenth day of disease.

Opening of the corpse twenty-eight hours after death.

EXTERIOR. — Form of body perfect ; considerable cadaveric stiffness ; no red or purple stripes on the anterior and lateral parts of the body.

HEAD. — Some miliary granulations were seen situated

upon the *arachnoid* near the longitudinal sinus, towards its posterior part, where the membrane was thick and not translucent. Traces of effusion underneath it ; a very small quantity of serous fluid in the lateral *ventricles*. Cerebral veins nearly empty ; *pia mater* slightly injected. *Medullary** substance had a uniform rose color throughout ; *medullary* contained some bloody points ; but throughout cerebrum and cerebellum there was generally a natural consistence.

NECK. — The mucous membrane of the *trachea* was red ; the larynx and epiglottis were natural.

CHEST. — No serous fluid in the *pericardium*.

The *heart* was somewhat soft, of a violet color, and pale, walls of right ventricle only one line thick. The *aorta* was of a rather vivid red throughout its whole extent ; otherwise healthy. There was a wine-glass of serous fluid in each one of the *pleura*. The *lungs* had no adhesions. The left was a little heavier than the right. Its lower lobe had upon its surface, as well as in its substance, a great number of blackish spots, of various sizes, and from them could be squeezed a small quantity of fluid of the same color, not frothy. In addition to these, there was a very large band of a not less blackish hue behind, about one inch thick. The texture of this lung was a little more dense, and less firm than usual. The lesions of the right lung were similar, but of a less marked character. The *bronchia* contained a moderate quantity of mucus, but were otherwise healthy.

ABDOMEN. — The *œsophagus* was deprived of its epidermis, but otherwise was nearly natural. The *stomach* was of medium size. Its mucous membrane was of a mottled red color in the great cul-de-sac, where it was softened in some

* Query “cortical ?” — H. I. B

points ; it had a pale rose color, and was of a proper thickness and consistence in other parts. The submucous tissue of the inferior extremity of the organ was somewhat œdematous from the effusion of a bloody serosity into it. The *small intestine* was rather larger than natural ; it contained two lumbrici, rather a large quantity of mucus in its first half ; a thin, red, fluid in the second, where its mucous membrane was of the same color, whilst that of the neighboring part of the duodenum was whitish and yellowish.* It was of good consistence, and gave strips from six to ten lines long, throughout the greater part of its extent ; it was very much softened throughout the five last feet of the ileum, where, in many points, it had only the consistence of mucus. In this last part, were twelve *elliptical patches*, rarely more than one or two inches long ; red ; raised above the surrounding parts more than a half of a line, some ulcerated, others not so. These *ulcerations*, which were from two to three lines broad, were situated upon the patches nearest the cæcum, and through their whole extent the mucous membrane was destroyed. Around them this membrane was, as likewise on all the surfaces of the patches which were not ulcerated, thickened and softened, and no strips of it could be raised. The subjacent cellular tissue had the same color and thickness. The last five inches of the ileum, by the increased size of the small patches, which are found there even when the part is in health, presented the appearance, as it were, of one continued patch, they having all undergone the same marked changes as those which have just been described. The *large intestine* contained a moderate quantity of fecal matter, of a pulpy, or perhaps a little greater

* The muscular coat, corresponding to this, was a little red also, but otherwise was healthy. — LOUIS.

consistence. Its mucous membrane was pale or greyish, somewhat softened in the cæcum, of proper consistence and thickness throughout the rest of the canal. All the *mesenteric glands* were more or less red and enlarged; but this increase of size, slight in the half nearest the duodenum, was very marked near the cæcum, so that, in this part, the glands were generally of the size of filberts; were very much softened, and easily reduced to pulp, without, however, having any traces of pus in them. The *liver* was somewhat pale, flabby, less resistant than usual to pressure; the bile of the *gall-bladder* was blackish, moderate in quantity and tenacity. The *spleen*, somewhat larger than usual, was softened, and of quite a dark color. The *kidneys* were less firm than natural. The *other viscera* were healthy.

Although our patient died on the ninth day of his disease, much more promptly than that of the last observation, the morbid changes, wrought in the elliptical patches of the ileum, were perfectly similar to those which have been described in the preceding cases, and were more marked near the cæcum than elsewhere. And, as we cannot suppose the redness, softening, thickening and afterwards ulceration of the patches to have been the result of one day's disease only, we may, from this, independently of the nature of the changes, affirm that the period at which these lesions began was very near that of the disease. And I cannot see how it is possible to doubt that it was exactly the same; these lesions being the most severe of all, and the first symptoms indicating an affection of the abdomen.

The disease in the mesenteric glands corresponding to the ileum, comes also in support of this opinion, this alteration, which was severe, necessarily having been consequent upon

that of the patches. As to the glands which corresponded to the jejunum, their redness and their increased size could not be attributed to the alteration of the patches, or to the intermediate mucous membrane, inasmuch as they were healthy. To admit that this twofold lesion was owing to the passage of some lymphatic vessel, arising from the patches that had undergone some morbid change, would be an hypothesis ; so that it would seem to result from this fact, as we should infer from some of those which precede, (Observ. 3, 4, 7,) that the lymphatic glands are sometimes altered during the course of the typhoid affection, independently of the organs to which they correspond, and doubtless according to the same laws by which the morbid changes of other viscera which occur more or less frequently, are governed.

Notwithstanding the rapid march of the disease, the spleen, the kidneys themselves, were softened in a remarkable manner. And as these softenings are not constant, and as, for this reason, we can consider them only as one of the consequences of the affection, it is not to be presumed that they began, in this case, with the first symptoms ; and hence we must conclude that they can take place very rapidly. We cannot doubt, moreover, that they contributed in this case more or less to the production and hastening of the fatal termination.

The red serous like fluid in the pleura ; the spots of the same color, though of a much darker hue in the lungs ; the red, somewhat liquid substance in the ileum which are found, in different degrees, in most of those cases, in which death happens soon, and in an almost sudden manner, were doubtless phenomena produced by the agonies of death, and in this view, do not merit special attention. But it is proper to remark, that that portion of the muscular coat of the ileum, which corresponded in situation to the spot on which the red

fluid rested, was itself a little red, without being otherwise altered ; and probably this redness was caused by imbibition ; as was the case, we may suppose, in the aorta. This subject I shall examine at a future period.

TENTH OBSERVATION.

Pains in abdomen, and soon afterwards diarrhœa, with uninterrupted delirium ; death on *eighth day*. Elliptical patches of the ileum red, thickened, softened, not ulcerated ; mesenteric glands, corresponding to them, of a rose color, very much softened, and enlarged ; thinning and softening of the mucous membrane of the stomach ; considerable softening of the heart, spleen and liver.

A GIRL, æt. 21, of small size, somewhat fleshy, and with a well formed body ; had been sick seven days and a half, when she was admitted into the hospital of La Charité, May 29th, 1826. Had been at Paris nine months, and had been perfectly well always during that time, until the present disease, which began with pains in the head, a chill with trembling, followed by heat and sweat, pains in the throat and abdomen, and a little delirium in the night. These symptoms, excepting the chill, had continued ; the delirium had become permanent, from the third day, and at the same epoch commenced a diarrhœa, considerable at first, and had been constant afterwards. The patient had been confined to her bed from after the first forty-eight hours, and had taken for nourishment, a little diluted beef-tea, during the first two days ; she had afterwards partaken of demulcent drinks, but had used no other remedy than the application of two blisters to legs.

She died on the morning after her arrival at the hospital, at two o'clock ; and it was from the physician, who had taken

care of her previously, that I obtained the preceding notes of her case.

Opening of the corpse thirty hours after death.

EXTERIOR. — Body not much emaciated ; nothing else remarkable.

HEAD. — White, opaque, rather numerous granulations, were seen upon the *arachnoid*, near the cerebral falx ; slight effusion under arachnoid ; not a drop of serosity in the lateral *ventricles* ; superior cerebral veins a little distended with blood near the occiput ; *cortical* substance pale ; *medullary* moderately injected ; both of a good consistence. Left side of *cerebellum* a little less firm than the right.

NECK. — The *epiglottis* presented to view nothing remarkable. The *larynx* and upper part of the *trachea* were of a greenish hue ; otherwise healthy.

CHEST. — The *heart* was of a violet hue, extremely soft, easily torn, and retained any form into which it was put. The paries of the right ventricle was one line and a half thick ; that of the left was three only. The *aorta* was red in many points, without any other appreciable lesion. A little bloody serosity in the right *pleura* ; from seven to eight ounces in that of the left. The lungs were free from adhesions, crepitating as emphysematous parts do.* The *right* was rather large ; its inferior lobe was of a deep red, containing little air and liquid ; it was flaccid, not hepatized ; its superior lobe was, at the same

* Crepitation is mentioned as one of the characteristics which the lungs present in their healthy state, but it is an error which I think was first noticed by Dr. Piédagnel. In the healthy state of the lungs they are soft, and recede under the pressure of the fingers without crepitating. — LOUIS.

time, lighter and softer and of a less dark color. The *left* lung was in an analogous, but less advanced state.

ABDOMEN. — The intestinal tube was very slightly meteorised ; some spoonfuls of a reddish liquid were found in the peritoneum, near lumbar vertebræ. The *œsophagus* was perfectly healthy. The *stomach* of moderate size ; covered internally with a small quantity of thick mucus. Its mucous membrane was generally greyish ; it was of a pale red over a small space in the great cul-de-sac ; and in this part were whitish bands parallel to the great curvature, from three to four lines in length, and an equal number in breadth, and in these the membrane was extremely thin, and soft as mucus. In other parts it was a little less firm than usual, was easily broken, and near the small curvature, three inches from cardiac orifice, upon the posterior face of the stomach were folds of membrane, radiating in a circle from seven to eight lines in diameter. The mucous membrane, at the point where these folds united, adhered very closely to the submucous tissue, which was evidently thickened there. The *duodenum* was perfectly well ; its crypts in a natural state. The *small intestine* contained a moderate quantity of yellow mucus. Its internal membrane was thin, pale, and gave strips from two to six lines long, throughout its first four fifths ; it was red in spots, and still more softened in the last fifth, where were seen twelve *elliptical patches* of a deep red color, more or less prominent, from one to three inches in their longest diameter, and they were larger and thicker as they were nearer the cæcum. The first two were much less thick than the others ; they were softened but not ulcerated ; they had many little rounded depressions, which were evidently the orifices of the crypts whose union formed the patches. The others were from a line and a half to two lines thick, and did not have

the orifices of which we have just spoken. They were composed principally of the submucous tissue, very much altered in texture, firm, thick, of a homogeneous aspect, similar in appearance to lymphatic glands, which are red and not softened. They were less thick at their centres than at the circumference, in consequence of the thinning of the mucous membrane at this former point, but there was no complete destruction of it in any part. The three last patches, of which that nearest the cæcum was three inches and a half long, were the thickest and had the most prominent points, or bands running transversely across them, these bands being formed principally by the cellular tissue. The *large intestine* contained a moderate quantity of pultaceous, fecal matter. Its mucous membrane was greyish in some points, generally pale; it gave strips from eight to ten lines long, and occasionally from four to twelve. The cæcum, and right part of the colon had two small, somewhat elevated spots, similar in structure to the elliptical patches of the small intestine. The *mesenteric glands* were of a rose color, very much softened and enlarged, in the neighborhood of the cæcum; none of them were of a deep red color. The *liver* was pale, extremely soft, chiefly in its large lobe, whose texture was a little less firm than natural. Its vessels contained some bubbles of air. The bile of the *gall-bladder* was small in quantity, of moderate consistence and of a very dark color. The *spleen* was more than three times the usual size, was of a brownish or bluish color, very much softened, especially in its upper half, which was also the most colored. The neck of the *uterus* was very narrow, its body larger than usual in young subjects and slightly engorged with blood. The left *ovary* contained a small serous cyst, and on its exterior there was a fibrous tumor, about the size of a pea. The *other viscera* had nothing remarkable about them.

The affection was rather more rapidly fatal in this than in the last case, that is to say, at the end of the eighth or beginning of the ninth day, and the succession of symptoms was the same. The first announced a lesion of the intestinal tube, and at the opening of the body the elliptical patches of the ileum were found more or less diseased, and larger and thicker, as they were nearer the cæcum. The mesenteric glands, corresponding to them, were enlarged as well as softened, so that the reflections made upon the preceding observations, especially upon the ninth, apply to this very naturally. The state of the submucous tissue of the patches was, moreover, very remarkable; this tissue being not merely red, soft, and coherent, as we have seen it in many cases, nor transformed into the yellowish substance, which we have observed less frequently, but as it were, holding a mean between these two states, and more like red and firm lymphatic glands, as has been said, than any other tissue. The other organs were not less worthy of attention, when considering the very rapid course of the disease. Nearly all were more or less seriously diseased. If the brain had only a slight injection, the lungs presented a very marked alteration of structure; the liver, and especially the heart, was very much softened, extremely flaccid; the spleen was very large and easily reduced to a pulpy state. And, by reason of the shortness of the disease, and of the degree of these different lesions, one would be induced to believe that they commenced at the same time at which the changes of the elliptical patches began, and that one and the same cause acted simultaneously upon all these organs; if these lesions did not sometimes appear uncombined with one another; if, as I said above, they were not sometimes entirely absent, and should on that account be regarded as secondary.

A part of these reflections are applicable to the softening, with thinning of the mucous membrane of the stomach, which we meet here for the first time, to a certain degree. Among the few symptoms which I have noticed, none relate to this lesion; and without being able to affirm that the patient had not any, it is proper to say, that such is the fact in nearly all the cases of the typhoid affection, doubtless because the alteration of the mucous membrane of the stomach comes on gradually, and quite often when delirium or drowsiness mask the greater part of the symptoms.

I would remark also, that, in cases where the disease of the elliptical patches of the ileum, and the softening of the mucous membrane between these patches, would seem insufficient to explain the death of the patient, these secondary lesions supply what is wanting in this respect.

ELEVENTH OBSERVATION.

Diarrhœa at beginning; sensations as if eyes were dazzled; afterwards, delirium; considerable meteorism during the last days; rose colored lenticular spots; death on the *eighth day*. Elliptical patches of the ileum red, softened and thickened at their edges; numerous crypts or solitary glands, some of which were slightly ulcerated; mesenteric glands very much enlarged, of a rose color, streaked with black, and very much softened near the cæcum; mucous membrane of the colon softened, thickened; that of the gall-bladder evidently inflamed.

A MASON, æt. 19, of a frail constitution, at Paris twenty months, fell sick September 29th, 1826, and was brought to the hospital of La Charité on 3d of October. At the commencement he had had headache, weakness, chills, anorexia, great thirst, continuation of the diarrhœa which had

appeared on the preceding days. These symptoms continued; the patient ceased working, but was able to walk about during some days; sensations of eyes being dazzled during the two before entrance, but the feebleness increasing, he was brought in a carriage to the hospital. Until that period he had had no delirium, and no active remedies employed. The patient had not taken, as is usual with such people, warm wine and sugar, but had limited himself to some soup and beef-tea. Delirium came on soon after his entrance, and he got out of bed during the night without having any apparent object in view.

On the morning of the 4th he was lying on the right side; moderate stupor; patient had the appearance of one in deep thought; hearing acute; eyes slightly injected; words nearly unintelligible, like those of one in a state of intoxication; the patient knew that he was at the hospital, but could not tell how long he had been there. Neither headache, nor pains in the limbs; tongue moist, but red at edges, whitish and yellowish at centre; great thirst; deglutition easy; abdomen very much meteorised, not painful on pressure; supple, even in the region of the spleen, and on it were many ill defined rose colored lenticular spots; pulse rather large, with a double beat, at a hundred and eight; skin somewhat hot; cough not frequent, but had had some for ten days; respiration moderately accelerated; sonorous râle in expiration, in front; some crackling behind.

(Sweetened barleywater; whey; venesection to $\frac{3}{4}$ x; blister to thighs.)

The face became more natural, less pale, immediately after the bleeding; and a short time afterwards, as I passed near the patient he informed me that he had just been bled. Shortly after this his attitude became that of one careless of every thing; one of his feet was thrust out of bed.

The clot was neither buffed nor cupped ; during the day there was a little inclination to sleep, and the patient had some liquid dejections ; in the night, delirium, during which the patient fell upon the floor. He became again calm at four o'clock on the morning of the 5th, and at the visit there was profound drowsiness ; he answered questions but seldom, and sometimes not at all, and they were as unintelligible as on the previous day. The tongue, which could be seen only by forcing down the lower jaw, was white and moist ; the abdomen was still more meteorised than before ; the lenticular rose spots the same ; and pressure made upon different parts of the abdomen excited distortions of the countenance.

(Blisters to legs.)

Involuntary dejections ; drowsiness during the day, and during the night it was accompanied by constant groaning. The same state continued on the morning of the 6th. Then the arms, when unsupported, fell as if paralyzed, the pupils were rather large, sensible to light ; the jaws very firmly drawn together, so that they could not be separated by a considerable mechanical force ; the skin was warm and bluish in many points, the blisters were red and more painful than usual ; pulse hurried, sometimes insensible, at a hundred and fifty ; respiratory murmur strong in front, without any râle.

The patient died on the same day, at three, P. M.

Opening of the corpse twenty-eight hours after death.

EXTERIOR. — Considerable emaciation ; chest somewhat narrow ; very marked stiffness of body ; muscles of good color, not sticky. Anterior part of trunk bluish as during life ; redness of blisters a little less marked than at that time ; the skin

corresponding to them was without change in consistence or thickness.

HEAD. — Bones of the cranium extremely thin; cerebral veins nearly free from blood. No effusion under the *arachnoid*; some drops of serosity in the lateral *ventricles*; two spoonfuls of the same liquid in the lower occipital fossæ. *Pia mater* very much injected; *cortical* substance of a slight rose color; *medullary* had a moderate quantity of red points when cut; both were of a good consistence. The *cerebellum* was in the same state as the cerebrum.

SPINE. — Spinal marrow perfectly natural.

NECK. — Right *tonsil* contained a little pus, although it was of a small volume; the *pharynx*, *epiglottis*, *larynx* and *trachea* had nothing remarkable about them.

CHEST. — The *pericardium* was natural. The *heart* was of ordinary size, but its substance was a little less firm than usual. Its right ventricle contained a moderate quantity of clotted blood; the left, almost none at all. The *aorta* contained much; it was red, but otherwise healthy. The *lungs* were free from all adhesion, sufficiently light, and of a pale rose color in front; a little deeper color behind, where were seen blackish spots, from three to four inches large, and nearly one inch thick, without any increase in the density of the pulmonary tissue, which was, in this part, as in all the rest, a little firmer than natural, and presented, when cut, a dry surface. No effusion into the *pleura*.

ABDOMEN. — The *œsophagus* was perfectly well. The *stomach*, of moderate size, contained a small quantity of orange colored fluid. Its mucous membrane was red in the great cul-de-sac, and so to within three inches of pylorus; it was spotted yellow in some points of its superior extremity, mamelonated on some parts of its lower, but it was of a good consistence

and thickness throughout its whole extent. The *duodenum* was a little larger than usual, of a mottled reddish color in its interior; the small glands near the pyloric valve were larger than they are, when in the healthy state. The *small intestine* was a third larger than usual, and in its first half was an intussusception from above downward, for the space of two feet, and in this same part was a great deal of clear bile and mucus. Its mucous membrane was a little red in its first quarter, then greyish, or of a greyish and whitish color, and finally it was of a deep red, mixed at intervals with a grey tint in the last four feet. Of a proper consistence and thickness in the jejunum, it was slightly softened afterwards, and gave in the last quarter of the ileum, strips only from three to five lines long. In this last part were twelve *elliptical patches*, from one to two inches in their greatest diameter; more near to one another, and larger according to their proximity to the ileo-cæcal valve; at their edges they were about a line thick, and were chiefly formed by the mucous membrane, they were soft as pulp and thinned in the centres. When placed in water a kind of flocculent or downy substance (tomentum) was seen to separate itself from the surface of those nearest the large intestine; it varied in length, and was not discovered upon those at a distance from the cæcal valve. The cellular membrane underneath was of an intense red, slightly thickened. Many patches had ridges running transversely across them, from one to two lines broad, which were prolonged beyond the bounds of the patch, and were composed chiefly of the cellular membrane, which was, in these parts, about one millimeter thick. The dark red color of the ileum ceased at about four inches from the cæcum, and the space was occupied almost entirely by one large rose colored patch and four smaller ones. Many solitary glands were seen in the intervals

between the patches, and like them were nearer each other, and larger according to their proximity to the ileo-cæcal valve, and here they were about one or two lines distant from one another. Some of them had begun to be ulcerated in this latter part, and the submucous tissue corresponding to them was without sensible alteration of texture. The *large intestine* was of double its natural size, and contained a moderate quantity of liquid fæcal matter. Its mucous membrane was of a deep red in the rectum, of a bright red in the right colon; of twice its usual thickness, and was softened in its first half; after that it was of nearly natural consistence. It had throughout its whole length a great number of lenticular, *flattened crypts or glands*, more numerous in the half near the cæcum than elsewhere, and here they were only from three to four lines apart. Some of those nearest the cæcum were slightly ulcerated at their centres. The *mesenteric glands* corresponding to the larger part of the ileum were of the size of large hazlenuts, of a pale rose color, streaked with dark red, very much softened, but without the least trace of pus in them. The glands of the *mesocolon* were neither so much softened, nor enlarged, *ceteris paribus*, as those of the mesentery. *Liver* a little pale, of natural firmness of texture. *Gall-bladder* small, containing a small quantity of brownish red bile, and of rather thick yellow, purulent matter. Its mucous membrane had its usual areolated appearance, was of a pale rose tint, and three quarters of a millimeter thick. *Biliary ducts* healthy. *Spleen* a little softened and enlarged; of a dark color. *Kidneys* greater than usual; their cortical substance streaked with lines of dark red color. The remainder healthy.

The diarrhœa, which was the first symptom of disease in the patient, began September 28th; death took place October

5th, that is to say, the disease lasted a little less than eight days. And as the morbid changes in the patches of the small intestine were the gravest of all found in the intestinal tube, it is natural to think that they commenced the earliest, that they began with the diarrhoea, that is, at the beginning of the affection. This opinion is confirmed, as in the preceding observations, by the state of the mesenteric glands, and even, to a certain extent, by that of the glands of the mesocolon, which were less softened and less enlarged than those of the mesentery.*

If the disease of the mucous membrane of the large intestine was considerable, the other secondary lesions were much less marked. The redness of the mucous membrane of the stomach, which organ had no other remarkable appearance, was doubtless of very recent date, probably the product of a simple congestion of blood, occurring during the last moments of life ; at least, it could not with propriety be supposed the result of inflammation. The heart and liver were very nearly healthy ; the increased size and softening of the spleen, slight ; the kidneys a little larger than usual, and streaked with black lines throughout the whole of the cortical part. Were they softened ? The internal coat of the gall-bladder was red, thickened, and covered with a certain quantity of mucus. All these lesions were of slight importance only, when regarded as causes of death, but it may be asked, if, when combined with those of both intestines, they can explain, in a satisfactory manner, the death of the patient. Although the rapidity with which alterations take place in our organs, is one of the chief elements in a problem of this nature,

* We shall see at a future time, when a general description of the lymphatic glands is made, why we cannot speak more positively upon this subject. —
Louis.

we can easily understand that we might be unable to decide the question, even if we did take into consideration this circumstance. However, the changes in the cerebral functions, whatever may be the cause of them, would explain, as we shall see hereafter, what the state of the organs alone cannot.

Notwithstanding the small number of complications, and the comparative importance of each one of them, the symptoms were the same, as in a great number of cases in which the secondary lesions were much more grave ; and this, with other nearly similar facts, shows that almost all the symptoms, observed in typhus fever, and especially those that may be called characteristic, depend on the peculiar morbid change in the ileum.

TWELFTH OBSERVATION.

Diarrhoea in the beginning ; some diminution of strength ; delirium ; confinement to bed during twenty-four hours only ; death on the *eighth day*. Elliptical patches red, numerous, thickened, and softened in the ileum, one of them ulcerated ; mesenteric glands, corresponding to them, of a slight red color, very much enlarged, extremely softened ; considerable softening of the heart and liver ; spleen very large and slightly softened.

A MAN, æt. 22 ; of a strong constitution, was admitted to the hospital of La Charité, August 8th, 1824, under violent delirium, and with much meteorism of the abdomen. Forty leeches were applied to his abdomen without the least success, and at four, A. M., the next day, he expired.

I tried to obtain some account of the state, in which he had been previously to his entrance into the hospital, and I learned from those with whom he usually worked, that five days before, that is, on the third of August, he had been persuaded

to leave work, by one of his companions who perceived his uneasiness and weakness. On the morning after that, he took breakfast as usual, at the inn, having told a person whom he met, while going there, that he did not feel well. He had complained from the beginning of pains in the abdomen; he had delirium and diarrhœa on the 7th; and on the 8th, in the morning, before being brought to the hospital, he came down stairs, with a bundle under his arm, saying that he was going back to his own part of the country. He had been at Paris fifteen months.

Opening of the corpse twenty-one hours after death.

EXTERIOR. — Neck of greenish hue, very emphysematous. Abdomen of the same color over a portion of its surface, and much enlarged. Muscles firm, not sticky, and of a good color.

HEAD. — A few small opaque granulations were seen in the *arachnoid* near the *falx*; no effusion under the *arachnoid*, a small spoonful of serosity in each one of the lateral *ventricles*. *Pia mater* healthy, not injected; *cortical* substance of a pale rose color; *medullary* had a few red points in it. The *substance* of the brain was of a good consistence. The rhomboidal bodies of the cerebellum were of a greenish color, but otherwise healthy.

SPINE. — *Medulla spinalis* of natural color and consistence.

NECK. — *Amygdalæ*, of a livid red. The *pharynx*, the *epiglottis* and the *larynx* presented no remarkable appearances; the *trachea* was of a greenish hue.

CHEST. — *Heart* extremely soft, not colorless. *Aorta* of a deep red throughout its whole extent, and the arteries taking their origin from it, had a more or less vivid rosy tint, which extended into the middle coat as it did in the aorta. About

a pound of red fluid was found in the left *pleura*. General cellular adhesions of the right *pleura*. *Lungs*, small in volume, heavy, flabby, and blackish below, externally as well as internally, and very easily torn. Incisions made in these parts allowed a large quantity of blackish blood to escape, containing but very little air in it; the pulmonary tissue seemed homogeneous, had not a granulated aspect, but was, what is usually called, splenified.

ABDOMEN. — Both of the intestines were meteorised, and of double their usual size. *Œsophagus* healthy. *Stomach* of moderate capacity, containing a little yellowish liquid. Its mucous membrane had some red patches in the great cul-de-sac; was yellowish or of a lilac hue in the intervening spaces; whitish or very slightly greyish every where else; it was a little softened in its upper half; of good consistence in the lower, and of proper thickness throughout. The *small intestine* contained a moderate quantity of mucus and bile. Its internal membrane was pale, perfectly healthy in its first two thirds; and preserved its whiteness and tenuity throughout, but was softened in the last eight feet, where strips from three to four lines in length only could be raised. The *elliptical patches* were in the same part red, enlarged and thickened, and their redness, their thickening, and their enlargements were more marked, in proportion to their proximity to the cæcum; so that, in one foot of this intestine, two of them were three inches long, by one and a half broad. The mucous membrane on their surfaces was very much softened, and more than a millimeter in thickness, it was entirely wanting over a small space about the centre of the patch nearest the ilio-cæcal valve. The cellular tissue underneath was not less red, was a little thicker, and its thickness was in the same ratio, and pursued the same course as that of the mucous membrane. In

the intervening spaces between the elliptical patches which were diseased, were found others much less extensive, of an irregularly round shape, otherwise similar ; also white, rather numerous solitary crypts, from one to two lines in diameter, adhering to the submucous tissue. The three last inches of the ileum, and the corresponding face of the ilio-cæcal valve seemed composed of only one patch, in consequence of the union of many others which were red, rough, and of all sizes. The *large intestine* had in it a moderate quantity of fæcal pultaceous matter ; its mucous membrane was pale, and of a proper thickness and consistence throughout its whole extent, and in its first half was rather a large number of crypts, one line or less in diameter. The glands of the *mesocolon* were reddish, enlarged, of the size and shape of peas ; those of the *mesentery* were about the size of hazelnuts, or a little larger ; they were of a rose or violet color, very much softened, so as to be reduced to a pulpy state by a very slight pressure. The *liver* was pale, a little greyish, flaccid and easily torn. The *gall-bladder* contained a rather large quantity of reddish, somewhat thickened bile. The *spleen* was four times its usual size, bluish or blackish, softened, but not to a remarkable degree. *Kidneys* of a violet hue ; *bladder* very much distended by a great quantity of urine ; its mucous membrane was healthy.

Although I was able to obtain imperfect details only, in relation to the state of the patient, previously to his admission into the hospital, particularly in relation to the precise time at which the disease began, it is nevertheless clear that its course was very rapid, (*foudroyante*) the patient having kept his bed during twenty-four hours only. It was only six days before his death, that he was sent away from work by one of his companions, who observed him to be feeble and suffering, and

supposing that the disease began two days previously, without having been observed, a length of time, as it seems to me, sufficiently great, it proved fatal on the eighth day, as in the preceding case. If, moreover, the first symptoms indicated a lesion of the digestive tube, the ileum was the portion of it, found at the autopsy, most largely and seriously changed in structure, so that we cannot doubt that these lesions commenced at the same time that the disease did. Is it necessary to state, after all that has been said, that the alteration in the elliptical patches was more marked in the neighborhood of the cæcum than any where else ; that it had followed its wonted course ?

Excepting the enlargement of the solitary glands, the mucous membrane of the large intestine was healthy, and this nearly healthy state of the canal shows, that we can hardly refer the diarrhœa to any thing save to the ileum. The softening of the mucous membrane of the stomach was slight ; that of the liver and especially that of the heart, very considerable ; the spleen was quite large, and its consistence very much diminished. So that after the ileum, the heart, the liver and the spleen were the most seriously changed in structure ; and if the lesions of the ileum are not sufficient to explain death, we can conceive of its taking place very well, in consequence of their union with so many different ones in other organs.

Two other very remarkable circumstances are noticed in this observation, viz. 1st, the slight decrease of strength in the patient, notwithstanding the rapid march of the disease ; inasmuch as he kept his bed only twenty-four hours ; and 2d, the latent state of the disease ; but of this I shall speak hereafter, when giving the facts relative to this form of the affection.

Notwithstanding the absence of much detail, which, notwithstanding my endeavors, I could not obtain, the following observation is worthy, as we shall see, of much interest being taken in it.

THIRTEENTH OBSERVATION.

Delirium ; death on the *eleventh day* of the affection ; elliptical patches in the ileum red, softened, thickened, one of them ulcerated ; lymphatic glands, corresponding to them, very voluminous, of a rose color, with black points in them, very much softened ; destruction of the mucous membrane of the stomach in bands, and of a part of the submucous tissue corresponding to them.

A MALE domestic, æt. 30 ; strong, large, perfectly well made, was brought to the hospital of La Charité, January 13th, 1825. I learned from the persons who brought him, that he had been sick from the 8th of the same month, that he had been indisposed during the five days before that date, and that an emetic had been given to him. They could give me no farther account of him. Two hours after his admission to the hospital, the patient was as follows ; profound stupor ; drowsiness ; and a short time afterwards, his air was wandering as of one occupied in thinking upon a subject, different from that of his actual state ; answers insignificant, unintelligible, or none at all given ; pupils large ; extreme weakness ; and sometimes palsy of right arm ; lips and ears purplish ; tongue pale, moderately moist, protruded without hesitation ; abdomen of natural shape ; frequent and involuntary dejections ; pulse regular, at a hundred and ten.

On the morning visit of the next day, 14th, the patient was dying ; kept perpetually moving the lower jaw from the right

to left; frothed at the mouth; his pupils were much contracted; his respiration was rattling. He died at one, P. M.

Opening of the corpse forty-three hours after death.

EXTERIOR. — A considerable degree of stiffness of body; muscles thick, of good color.

HEAD. — No effusion under the *arachnoid*; a little serous fluid in each of the lateral *ventricles*, none in the lower occipital fossæ. *Pia mater* red and somewhat engorged with blood. *Brain* and *cerebellum* very firm and very much injected.

NECK. — *Epiglottis* healthy; *larynx* slightly reddened; *trachea* more so; their mucous membrane was, however, perfectly healthy.

CHEST. — *Heart* soft, of medium size, somewhat pale; walls of right ventricle one line thick merely. *Aorta*, red through its whole extent, in its last half especially, and this redness extended to the middle coat, where it gradually disappeared. Six ounces of red serosity in each one of the *pleuræ*. *Lungs*, free from adhesion, and of a vivid red color. The right was heavier than the left, blackish and hard at its posterior part, externally as well as internally, affording on pressure a small quantity of very red, not frothy fluid, but it had no traces of hepatization. Its anterior part was dry, without the least congestion of blood, as in the commencement of inflammation, as was also the left lung. The *bronchia* were of a less vivid red than the *trachea*.

ABDOMEN. — Four to five ounces of serosity in the right flank. *Æsophagus* perfectly well. *Stomach* a little larger than usual, reddish, purplish externally towards its large extremity. Internally and towards the upper part of the great cul-de-sac, over a space of three inches, it had a vivid red

color; at a rather less distance from the pylorus, it had a bluish white appearance, which was not continuous, but in the form of bands, from four to five inches long, and from four to six and eight broad. These bands, parallel or crossing each other, smaller on the anterior than posterior face, were traversed by large empty vessels. The mucous membrane was destroyed in these same parts, and the cellular membrane itself was almost entirely wanting over those upon the posterior face of the stomach, so that the muscular fibres, in this part, were covered only by a thin net-work of cellular substance. Between these bands the mucous membrane was thin and softened; it was also very thin, in a part near the pylorus, for the space of two inches, and softened in that portion only of the great cul-de-sac, where it was red. The *small intestine* had two intussusceptions from above downward, both ten inches long, and the mucous membrane, with the exception of the elliptical patches, was healthy throughout its whole extent, in color, consistence and thickness; even in the neighborhood of the cæcum. The patches which were diseased, were twenty in number, and occupied the last five feet of the intestine; they were of a more or less deep red color, prominent, and a line or more thick, and they were larger as they were nearer the cæcum, near which, the largest was three inches in diameter. A great number of small, circular depressions were seen on their surfaces, which were orifices of the crypts, by whose union the patches are formed. One of these patches was ulcerated, and in its centre was a kind of fragment of a yellowish substance, of small extent, and which was easily detached. About the ileo-cæcal valve, the intestine, to the breadth of two inches, and through the whole circumference was red, and presented an uneven surface, in consequence of the thickening and softening of the numerous

small patches, nearly confluent, which are always found there. The submucous cellular tissue, of all the diseased patches, was very red, and nearly as thick as the mucous membrane itself, and between these patches were found many little *pimples*, (boutons) from two to three lines in diameter, as prominent as the patches, and some of which were beginning to be ulcerated. The *large intestine* contained little *fecal* matter, and its mucous membrane was perfectly healthy. The *mesenteric glands* were rose colored ; had many black points on their cut surfaces ; were much enlarged and softened in the neighborhood of the *cæcum*. The *ganglions* along the small curvature of the stomach were healthy. The *liver*, flaccid, without any other appreciable alteration. The bile of the *gall-bladder* was not clear, nor adhesive, nor copious. The *kidneys* were somewhat soft and engorged with blood. The *spleen* was of double its usual size, of a deep violet red color, and moderately softened.

If the almost total want of data, in regard to the state of our patient, previously to his admission into the hospital, prevents us from assigning, with exactitude, the time at which commenced all the different lesions observed after death, we know this much about the disease ; to wit, we cannot suppose it commenced more than ten or eleven days before the death of the patient ; so that this short period was sufficient to produce the morbid changes of the patches, and of the mucous membrane of the stomach already described. And as the facts, reported previously, show that the alteration of the elliptical patches of the intestine precedes, in the disease we are now treating of, all other lesions, it becomes, if not absolutely certain, at least infinitely probable, that it was the same in the present case ;

that consequently the softening and destruction of the mucous membrane of the stomach, and of a part of the subjacent cellular tissue must have taken place with extreme rapidity. But that which gives to this observation still more interest, is the well marked limitation of the disorder in the ileum, to the patches, the mucous membrane surrounding being perfectly healthy. This indicates that any disease of this membrane, when it exists, is consequent upon, and is not essential to, the typhoid affection.

In *conclusion*, whether the disease prove fatal between the fifteenth and thirtieth days, or still more promptly, between the eighth and twelfth, yet we have always found, as the principal lesion, and, in some cases, apparently as the sole lesion, a more or less important change of structure in the elliptical patches of the ileum; they might or might not be ulcerated, but they were always more or less red, softened and thickened. But not only was this alteration always the same, but it was always more severe in the neighborhood of the cæcum, than any where else, and it seems, from this circumstance alone, to follow some constant and regular course, beginning near the ileo-cæcal valve, in order to extend thence, more or less rapidly, afterwards towards the duodenum. Every time that there were complications, and one could, by the aid of the symptoms, discover the periods at which the different lesions commenced, that of the patches of the ileum was evidently the first. And, as in nearly all the cases in which the patients died between the eighth and the twelfth days, the first symptoms were connected with a lesion of the intestinal canal; we must conclude that the time, at which the alteration of the elliptical patches of the ileum commenced, was the same as

that of the disease ; and we must not consider this lesion as one of the effects of the fever, but that it forms the anatomical characteristic of it. But if this conclusion is rigorous with regard to those patients, who died between the eighth and twelfth days of the disease, it is equally true of those, who, having died between the fifteenth and thirtieth, were in the same circumstances ; for in these, the first symptoms announced some alteration in the alimentary canal. Moreover, one cannot conceive why we may not draw the same conclusions with respect to patients, who, although they had no pains in abdomen or diarrhœa, experienced, later in the disease, all the symptoms which characterize the affection we are now treating of, and as in them, the disease of the elliptical patches of the intestine was the same as in the other cases.

Let us now pass to a new series of facts, in order to know the different modifications, presented by the lesions we have described, in persons whose disease has continued longer than in any of the previous cases.

CHAPTER III.

OBSERVATIONS RELATIVE TO PATIENTS WHO DIED AFTER THE
THIRTIETH DAY OF DISEASE.

FOURTEENTH OBSERVATION.

Diarrhœa, in the beginning, afterwards considerable weakness; meteorism; inclination to sleep; swooning; prostration; delirium; and death on the *fortieth day*. Elliptical patches of the ileum more or less largely ulcerated, reddish, greyish, moderately softened; mesenteric glands, corresponding to them, of a violet red color, enlarged and softened; mucous membrane of the colon, rough, softened, over a large extent, with ulceration; spleen a little enlarged and softened.

AN errand-man, æt. 22; of a moderately strong constitution, having resided two months at Paris, was brought to the hospital of La Charité, April 14th, 1825, and stated that he had been sick seven days. The affection had been preceded, during the same length of time, by pains in abdomen, rather severe diarrhœa (eight to ten dejections during twenty-four hours) and had commenced with a troublesome headache, pains in the limbs, dizziness, inclination to sleep, considerable weakness, anorexia, thirst, cough, great heat without chills. These symptoms, in addition to the diarrhœa had continued; the weakness had daily increased; dizziness had become more frequent, and so severe that the patient had been unable to walk, without the aid of a cane. He had completely lost his appetite four days only before his death, having eaten as much as usual, previously, although with some feelings of repugnance. He had had nausea occasionally during forty-eight hours before entering the hospital, for which there was no obvious

cause, and at intervals only had he been confined to his bed.

15th. Face, as of one somewhat sleepy ; tendency to sleep ; senses perfect ; headache ; memory perfect ; answered slowly ; able to lie in every position ; lassitude ; motions painful ; considerable sinking ; tongue dry, trembling, reddish at edge ; intense thirst ; anorexia ; epigastrium not painful on pressure, a little meteorised ; pains almost constant, though variable in intensity, in the right iliac fossa, increased by pressure ; pulse moderately large and full, at eighty-eight ; skin somewhat hot ; no lenticular rose colored spots ; no epistaxis from the fourth day of the disease ; a dry, sonorous, and sometimes a squeaking râle was heard, throughout the whole extent of the chest ; cough not frequent.

(Whey ; orge. oxymel, twice ; emollient enema, twice ; two cups of beef tea.)

Two dejections during the day. On 16th, the tongue was moist and nearly natural ; the abdomen, more meteorised than the day before ; the pulse was somewhat full, at a hundred ; skin rather hot, accompanied by a universal moisture, which had begun during the night ; hearing dull ; other symptoms as on 15th.

(Same prescription.)

In the afternoon, faint turn lasting one quarter of an hour, and, on the next day, slight stupor ; aspect still more dull ; somnolency nearly constant ; appearance of sinking ; patient answered in monosyllables ; tongue dry and clean ; pulse at ninety.

(Blisters to legs.)

The somnolency continued ; involuntary dejections during the day, in which were some lumbrici, and again syncope, without evident cause, lasting five minutes, the patient being

in bed. On 18th, face colorless ; same somnolency ; patient was lying motionless and almost constantly upon the back ; abdomen, very much meteorised, somewhat sensible to pressure over its whole extent ; tongue dry, reddish ; pulse as before ; no rose spots.

(Orge. oxymel, three times ; flaxseed enema ; fomentations.)

There was no perceptible change of symptoms during the following days, except that the patient had no syncope. On 21st, profound stupor ; pupils large ; eyelids closed, and could be opened only with difficulty ; stiffness of right arm, diminishing after motion, like a dry and tight hinge ; patient was sometimes unwilling to drink ; dejections still involuntary.

(Twenty leeches to ears ; orge. oxym.)

The loss of blood was considerable, and the inclination to sleep diminished somewhat in the evening ; but, on the next day, it was as marked as before ; the patient would not answer any question ; was perfectly motionless ; his tongue was covered with a yellowish coat, not entirely dry ; his abdomen was meteorised ; the respiratory murmur was mingled with a dry, sonorous, sometimes squeaking râle, which was stronger at left than at right, very nearly as it had been on the previous days.

(Ice upon head ; sinapisms to lower extremities ; orge. oxym. ; enema.)

The somnolency was, for a time, somewhat less after the application of the ice. At the hour of visit, 23d, it was as great as before ; and there was no perceptible change in the symptoms afterwards, notwithstanding the continued use of the ice.

From April 24th to May 10th, the day of his death, I observed as follows. The somnolency was interrupted only by a violent delirium, which made it necessary to restrain the patient by means of a straight jacket, during the nights, from

April 27th to May 6th. The face, generally rather flushed and sublivid, was colorless on April 30th and afterwards ; the extension of limbs was always very difficult, especially from May 2d to 6th ; the tongue, dry nearly all the time, was more or less trembling ; deglutition, difficult from April 30th to May 3d, very easy afterwards ; the dejections were always involuntary, from two to three every twenty-four hours, rarely more frequent ; the abdomen was somewhat meteorised April 27th, more so, May 3d, but it was of its usual form on 7th, and on 1st there were some lenticular rose spots upon it. The pulse varied from ninety-eight to one hundred pulsations in a minute from April 25th to May 1st ; it was very small and very feeble ; afterwards it was always about one hundred and eighteen, sometimes more, sometimes less ; it caused a trembling sensation to the finger ; his skin, which had been usually very hot and dry, became rather moist, during the seven first days of May. The cough was quite severe during the same space of time, and whenever I examined him, by means of auscultation, I heard all over the chest a dry sonorous râle. There was also at right back, April 29th, a subcrepitous râle.

Blisters were ordered to the thighs April 26th ; and April 6th, infusion of cinchona with syrop tartareux ; a potion made of wine and syrup of cinchona, each two ounces, and twenty grains of sulphate of quinine ; two glasses of wine ; an enema of camphorated cinchona ; aromatic fomentations. The same prescription was continued during the three following days.

Opening of the corpse twenty-four hours after death.

EXTERIOR. — Emaciation and considerable stiffness of body ; muscles firm, of a good color, not sticky. Complete destruction of the skin over the whole space where the blisters had

been applied to the thighs ; increase in density of the cellular membrane corresponding to the same parts.

HEAD. — Some miliary, opaque granulations (Pacchioni's glands) in the *arachnoid* near the longitudinal fissure ; no effusion under the arachnoid ; a half spoonful of serous fluid, in each one of the lateral *ventricles* ; somewhat less, in the lower occipital fossæ. The whole of the substance of the brain was somewhat softened, but not injected.

NECK. — The *epiglottis* and *larynx* were natural. The *trachea*, somewhat red at its lower part.

CHEST. — *Heart* flaccid, somewhat small, and to the anterior part of the right ventricle was attached a pedicle, about as thick as common thread, a half-inch in length, and terminated by an irregularly round tumor, composed of a demicartilaginous cyst, one half of a millimeter thick. This cyst contained a substance of a yellow ochre color, of the consistence of tubercle, which is softening. Walls of right ventricle one line thick ; those of left, three lines. The *aorta* was well. Some spoonfuls of bloody serous fluid in the cavities of the pleuræ. The *lungs* were light, not adherent ; of a beautiful fawn color in front ; of a mottled red and blackish color behind, and in the substance of the organ were parts of the same color, but less in size than those immediately under the pleuræ, in which part many were an inch in diameter ; no increased density of the texture, which was the seat of these changes. No traces of congestion of blood, as in the first stage of inflammation.

ABDOMEN. — The *œsophagus* was, in part, deprived of its epidermis. The *stomach* was of moderate size and contained a small quantity of yellowish, turbid liquid. Its mucous membrane in the great cul-de-sac, was of the same color ; of a faint rose color anteriorly, white every where else ; it was of proper

thickness and consistence throughout its whole extent, and even in its superior third gave strips from eight to nine lines in length, which is a very rare circumstance. The *small intestine* was slightly meteorised; contained rather a large quantity of mucus, and in its six last feet, a thick liquid of a reddish brown color. Its mucous membrane was of a pale rose color, and of a proper thickness and consistence throughout its first half; was somewhat more colored afterwards; of a livid and bluish red in its two last feet, where it was extremely softened, save in the four inches immediately preceding the cæcum. In the last third of the ileum were many *ulcerations*, of various sizes, the smallest being from three to five lines in their longest diameter. These ulcers were spread, nearly uniformly, throughout the whole circumference of the intestine; the largest, ten in number, were from one to two inches in their greatest diameter, near the cæcum, and opposite the mesentery. Their edges were about a line high, greyish, reddish, or of a violet hue, and composed of the thickened mucous and submucous cellular membranes, but especially by the mucous membrane, which was somewhat softened. The muscular was rather red and thickened, and had been fairly exposed by most of the largest ulcerations, or left covered by a thin lamina merely of cellular membrane. The small ulcerations had the same structure, except that the elevation of their edges was but very slight. The mucous membrane of the *large intestine* was of a livid red color in the cæcum; of a clear red in the ascending colon, and afterwards of its natural color. Extremely soft, in its first half, it became gradually stronger towards the rectum, where it had its usual strength. There were, moreover, from the cæcum, to the middle part of the transverse colon, many greyish *lenticular spots*, marked by black points in their centres; also, many small *ulcers*, from

one to five lines in diameter, with flattened edges, by which the muscular coat had been exposed, and they were larger and nearer one another, in proportion to their proximity to the middle part of the large intestine. The *mesenteric glands* were of a violet red color, enlarged, especially near the *cæcum*, where they were as large as hazelnuts, and softened in proportion to their volume. The largest contained a small quantity of pus. The *liver* was more red and more friable than usual; the bile of the *gall-bladder* was reddish and copious; the *spleen* was a little larger, redder and softer than usual.

Perhaps, at the first glance, there will be seen between this and the preceding observations, which I have given in chapter first, no very sensible difference, in relation to the object which now occupies our attention. In both, in fact, the ulcerations of the ileum were larger in the neighborhood of the *cæcum* than any where else; their edges were raised; the patches, on which the ulcers were situated, were more or less softened; the mesenteric glands, corresponding to them, were enlarged, and not less softened. Notwithstanding these points of resemblance, there was rather a remarkable difference between the patches in the subject of which we are now speaking, and those described previously. The latter were of a vivid red, and very much softened; the former were of a grey color mixed with red, and were somewhat less soft, as if, at the moment of death, the disease had retrograded. And another fact, which seems to indicate that the diminution or change of color was not a fortuitous circumstance is this, viz.; the color of the mesenteric glands, was not the same as that observed in glands of those patients, in whom the disease had proved more quickly fatal; so that we could suspect, from this single fact, that, at an epoch, more or less advanced, of the disease, the

patches and the parts about the ulcers become less red, change their appearance more or less rapidly ; and we may say as much of the mesenteric glands. Moreover, it is important to observe, that the characteristic symptoms, having not ceased at the time of death, we could not have anticipated, notwithstanding the length of the disease, the discovery of patches and ulcerations, very different from those found in subjects carried off more rapidly ; so that the fact which we are now examining, by showing us the first retrograde step which nature takes, is a new proof of the relation existing between the lesion of the patches in the ileum, and the symptoms of the disease we are now studying.

The symptoms, in fact, could hardly have been more severe than they were. The diarrhœa was considerable ; the meteorism, at the same time, very marked, and of long duration ; the depression of strength was more severe than it is in the majority of cases ; and although we cannot refer to it the attacks of syncope, which the patient had, inasmuch as they took place near the beginning of the disease, when the feebleness had not yet attained its maximum, still we cannot help admitting a certain relation between these two facts. I would add, that the inclination to sleep was constant, during the last twenty-five days, or it was interrupted only by delirium.

It will be remembered that, at the time of his admission into the hospital, the patient said he had been sick seven days only, although he had had diarrhœa during fifteen. It may be, therefore, asked, if the morbid change in the ileum commenced at the same time the diarrhœa did, or simply at the epoch at which the general symptoms began. If this latter hypothesis may be true sometimes, which we cannot doubt, the former, in the present case, seems to me the only probable one, since we ought, in order to be able fairly to reject it, to

have found in the intestinal tube a lesion older and more severe than that in the ileum, which was not the fact.

The following observation will give us an example of the state of the patches, at a much more advanced period.

FIFTEENTH OBSERVATION.

Diarrhœa ; pains in the abdomen ; considerable feebleness in the beginning ; continuation of the same symptoms ; increased feebleness ; taciturnity without delirium ; pains, with swelling in right parotid ; death on *thirty-sixth day*. Elliptical patches of ileum, thickened, slightly softened, somewhat depressed about the ulcerations ; mesenteric glands, corresponding to them, blackish and enlarged ; suppuration of the parotid gland, of the lungs, and of the pelvis of the same side, &c.

A MASON, of a moderately strong constitution, was brought to the hospital of La Charité, in a carriage, November 1st, 1826. According to his own account, which corresponded entirely with what I learned concerning him from his companions, he had been generally well ; at Paris two years, and had been sick four weeks. His disease began with pains in the abdomen, diarrhœa, anorexia, thirst, considerable weakness, by which he had been obliged to keep his bed from the first day. His pains ceased on the ninth ; the diarrhœa had always continued, very nearly with the same violence (six or eight dejections during twenty-four hours) ; and he had frequent turns of sweating. During this period, he had had neither cough, nor chills, nor headache, nor delirium. The patient had, from the commencement, taken for nourishment some cupfuls of soup only, had committed no excess of any kind, taken no emetic nor purgative, but had suffered the disease to pursue its natural course.

Nov. 2d. He was lying on his back in the following state. Face pale; eyes dull, languid; great prostration, without absolute stupor; somnolency; hearing rather dull; pupils moderately dilated; memory slow but perfect, so that the same questions, repeated several times, produced the same answers. Considerable weakness of body, so that the patient tottered, and was very near falling whenever he arose from the bed, in order to go to the close-stool. Tongue dry, like wood, protruded slowly and with difficulty, without any redness; great thirst; anorexia; deglutition sufficiently easy; abdomen supple, not tender on pressure in any part; three dejections during the night; pulse very small and feeble, difficult to be felt in left wrist, moderately accelerated; respiratory murmur pure, without any râle mingled with it; respiration accelerated.

(Blisters to legs; sweetened rice water; emollient fomentations upon abdomen; emollient enema.)

The patient passed his urine in bed; had two dejections; could not go to the close-stool without assistance, and was almost constantly drowsy during day and night. At the morning visit of 3d, he made some answers which were not correct, but a short time afterwards he was in full possession of his reason. The general aspect of patient was the same as on the preceding day; the abdomen very much meteorised, and not at all pained by pressure; the other symptoms were as on the 2d.

(Sweetened rice water; limon. muriat; tonic potion, with ʒ ij. of dry extract of cinchona; aromatic fomentations.)

During the day, the drowsiness continued, with considerable weakness; no delirium; two dejections. On 4th, the state of the patient had not changed in any sensible manner; he

complained of nothing, and declared that he suffered no where.

(Tonic potion with ext. cinch. ʒ ij. ; enema of camphorated cinchona.)

Until the 10th, the day of his death, the principal symptoms presented very few changes ; there was no stupor ; but the weakness increased every day, and the patient wishing to go to stool, during the night of 9th to 10th, fell upon the floor, and this circumstance he remembered the next morning. On the preceding evening some friends visited him, he recognised them and said a few words to them. There was no delirium at any time, but patient said nothing ; complained of nothing, and disliked to answer any questions addressed to him. On 8th, having myself perceived, for the first time, a tumor near the parotid, the patient said he had suffered from pain in that region for five days. The tumor did not increase sensibly in volume from 9th to 10th, and the skin, corresponding to it, did not undergo any alteration. On 8th, there was in the region of the sacrum an eschar, two inches in size ; his tongue was dry, blackish, thickly coated ; deglutition, often difficult ; abdomen not pained by pressure, as before, slightly meteorised, bluish in many points ; no dejection from 6th to 9th. The pulse varied from one hundred and five to a hundred and twelve pulsations, in a minute.

On the morning of the 10th, the patient seemed to have perfect use of his reason, took notice of every thing, without saying a word ; there were stripes upon the parietes of abdomen, somewhat as if they had been beaten with rods. He expired at eight, P. M.

Besides the tonic potion on 7th, some Spanish wine was directed, which the patient took with much pleasure, and some of which he asked for on the day of his death ; and on

9th, fifteen grains of sulphate of quinine were added to the potion.

Opening of the corpse thirty-six hours after death

EXTERIOR. — Abdomen a little meteorised ; its parietes were of the same color, and had the same stripes upon them, as during life. The skin, where the blisters had been applied to legs, was nearly wholly destroyed.

HEAD. — Slight effusion under *arachnoid* ; one spoonful and a half of clear serous fluid in right lateral *ventricles* ; a little less in left ; two in lower occipital fossæ. *Pia mater*, somewhat injected between the convolutions of the brain ; *cortical* substance of a pale red color ; *medullary* had no red points in it ; both were of a good consistence. The *cerellum* and *medulla oblongata* were perfectly well.

NECK. — Eight *ulcerations* in the *pharynx*, of which six were on the left side of it. Some of them encroached upon the *epiglottis*, or extended to the root of the tongue ; and were from eight to ten lines large, and by them either the submucous or muscular coats had been exposed. The right *parotid* was of twice its usual size, and, externally, was of a red brown color, mingled with yellow ; internally, it had a great number of small abscesses, from one to two lines in diameter, either distinct or united ; these contained a yellowish or orange colored pus, of an oily nature, bathing the substance itself of the gland, which was entirely exposed ; whilst in those parts, where there was no pus, the glandular granulations were throughout of a somewhat rosy hue, and separated from each other by a dark red, cellular tissue, somewhat thick, much less flexible than it is in the natural state. The *larynx* and *trachea* had nothing remarkable about them.

CHEST. — Two spoonfuls of serous fluid in the *pericardium*. The *heart* was rather smaller and less firm than usual, contain-

ing a moderate quantity of clotted blood. That of the *aorta*, whose parietes were perfectly white, was liquid. Some cellular adhesions between the *pleura pulmonalis* and *costalis* of the *right* lung; four ounces of bloody serum in the cavity of the *left* pleura. The *left* lung was nearly as light as natural, and had not the least traces of congestion of blood or commencement of inflammation in any part of it. It was of rather a vivid red generally; blackish behind, where it was more dense than in other parts, but every where it was very supple. The *right* lung was of the same color; it was hepatized, behind and at its apex, over a space or three or four square inches, and within this compass, were from fifteen to eighteen *cavities*, containing *pus*, from one to two lines in diameter. Below, in the same lobe, near the fissure that divides it from the lower lobe, in the midst of the healthy lung, were eight or ten similar abscesses, surrounded by hepatized parts from one to two lines thick. The lower lobe itself presented, likewise, in the midst of a hepatized mass, which was smaller than that at the apex of the lung, five small cavities, similar to the first, and containing *pus*. The *bronchia* were well, and covered by a little yellowish mucus.

ABDOMEN. — *Œsophagus* in a healthy state. *Stomach* of small volume, containing no kind of fluid. Its internal membrane was covered by a moderate quantity of mucus, and was a little softened in the great cul-de-sac; was greyish and of proper thickness and consistence every where else; it had, near the pylorus, some small black points, similar to those which are seen so often in the centre of the crypts of the large intestine, although they did not seem to me to resemble them, in any other respect. *Duodenum* natural, save a very slight softening of its membrane. *Small intestine* a little meteorised in its first half; had greyish and bluish spots on its second, ex-

ternally, but it contained a moderate quantity of yellow mucus. Its mucous membrane was greyish throughout, and bluish in the two inches near the cæcum ; it was thin, and of a good consistence in the first two thirds ; in the last third it was softened, and gave strips from two to three lines long only. In this last part, were fifteen bluish *elliptical patches*, opposite the mesentery, from an inch to an inch and a half in size, some ulcerated and others not. By four of the ulcerations, nearest the cæcum, the muscular coat had been exposed, for the space of five or six lines, and it was somewhat red and thickened ; in others, it was covered by a thin lamina of cellular tissue, and the circumference of the ulcerations was more or less depressed. The bluish patches, which were not ulcerated, were evidently raised above the surrounding parts, in consequence, principally, of the mucous tissue, which had, in these points, nearly half of a line in thickness, was somewhat less firm than usual, but stronger than it was in the preceding observation. The submucous tissue was also thicker than usual, greyish, and in some minute points, where it was nearly exposed, it had a bluish aspect. The structure of the undestroyed portion of the ulcerated patches was similar. Between the various patches was a good number of miliary crypts of the same color, which were not ulcerated. The *large intestine* was very much distended with air, covered the stomach, and pushed up the liver towards the fifth rib. It contained a rather large quantity of fæcal matter, pultaceous in its first half ; moulded in its second. Its mucous membrane was greyish, thin, softened, so that it could not be raised in strips. The cæcum had three ulcers in it, from eight to ten lines in diameter, by which the muscular membrane had been exposed, and through the rest of the intestine were a great number of greyish and bluish spots, about one line in diameter, over which the

mucous membrane, rarely cellular submucous tissue, was destroyed. The *mesenteric glands* were blackish, a little softened, larger than usual, but not of quite so great a size, *ceteris paribus*, as the glands of the mesocolon; they contained no pus. The *liver* was very flabby and pale; bile of the *gall-bladder* very abundant, of greyish green color, and very liquid. The *spleen* was double its usual size, of a red color, looking like dregs of wine, it being very much softened. The pelvis of the right *kidney* formed a large projection, at the side of the vertebral column, in consequence of its being distended by about three ounces of pus, without any calculus. On its internal membrane were a great many dark red spots, a little less than a line in diameter, some of which were isolated, others confluent; it was firm, and, at least, four times as thick as usual; it was more adherent than usual to the subjacent tissue, and this last was not so much thickened as the mucous membrane. The corresponding ureter had the same aspect as the pelvis, was smaller than the left, and its orifice into the bladder was somewhat larger than usual. The parietes of the right kidney were not quite so thick as they are ordinarily, were softened, of a mottled red color, and in them were many yellow points, especially at the lower part; the left kidney contained a little turbid urine, and it was redder than usual. No traces of pus in the bladder, whose mucous membrane was slightly spotted with red, but otherwise was healthy.

Notwithstanding the absence of delirium, and the calmness of the patient, during the whole course of the affection, it was impossible to be deceived as to its nature, whether we relied for our opinion, upon the diarrhoea, which commenced at the same time that the disease did, as is the fact, in most of the cases; or, upon the prostration of strength, which was a par-

ticularly important sign, and which began at the same epoch ; whose rapid progress was but little in harmony with the apparent lesions, and small number of dejections. There were other symptoms, making the same diagnosis necessary, viz. ; the tendency to sleep, heaviness, and soon meteorism, extreme unwillingness on the part of patient to the exercise of his intellectual faculties. In addition to these, we found, in fact, on opening the dead body, the elliptical patches of the ileum, more or less altered in structure, ulcerated, especially in the neighborhood of the cæcum. But this alteration, to which we must chiefly direct our attention, had a very different character from that which we have heretofore observed. The patches were of a somewhat vivid red color in the individuals, whose cases are found in the two first chapters ; greyish and red in the last ; but they were in this case of a greyish blue, without any mixture of red in it, and this color was of a deeper shade near the ileo-cæcal valve than elsewhere. The mucous membrane, besides being thus different in color, was likewise less thickened and much less softened, than in the other cases whose histories are given previously ; so that every thing seems to indicate that it had undergone, at a certain period of disease, an alteration, similar to that of the patches of the first of our patients, which were red, thickened, softened, and more or less ulcerated. This threefold lesion, already somewhat diminished or altered in the preceding observation, was more so in this, and we can rigorously admit that, at a still more remote period, the blue color of the patches, their thickening and their softening would have been much less, and would finally have disappeared. We can imagine also, that, in case the elliptical patches had not been ulcerated, no trace of the affection would be discovered, if the patient should die of some other disease, one or two months after convalescence from the first. We would

remark that the parts, immediately around some ulcers, were depressed, which indicates, as we shall see hereafter more clearly, a commencement of cicatrization.

The mesenteric glands were enlarged and softened, had a blackish color, consequently very different from that which we have heretofore observed, but it was analogous to that of the patches of the ileum, so that there can be no doubt that the lesion, which they had undergone, had retrograded more or less at the time of the death of the patient. This exact correspondence between the state of the mesenteric glands and that of the congregated crypts of Peyer, shows, moreover, how necessary it is to note every thing in relation to them, since we can, to a certain extent, determine what the changes in one are, from those observed in the others, or at least aid by our knowledge of one, to a more exact estimate of the other.

The ulcerations of the large intestine naturally excite the same reflections which were made upon this subject, in the last observation, but there is no need of referring to them again. But I would remark that the glands of the mesocolon were, proportionably, more enlarged than those of the mesentery, which seems to indicate that they had not retrograded, and that the morbid change in the ileum was anterior to that of the large intestine.

Other lesions, those of the parotid, of the lungs, and of the kidney of right side, were not less worthy of attention than the preceding, although secondary and developed, as is extremely probable, during the latter part of the disease. In fact, the inflammation of the parotid could not be referred farther back than eight days, which preceded the death of the patient; and the character of the pus, being the same in this organ and in the lung, there is no reason for admitting that the inflammation

of these two organs commenced at different epochs. As much may be said of the pelvis of the right kidney, and this circumstance only renders the calmness of our patient still more remarkable, which nothing could disturb, neither this threefold lesion, whose progress was so rapid, nor those of the small intestines and colon. Moreover, if this imperturbable calmness proves a marked predisposition ; the simultaneous inflammation of the kidney, the lung, and of the right parotid, does no less indicate one of another kind.

These three last lesions were in organs, two of which are always found in the body, but the lesion was always in that of the right side. Is this a simple coincidence, or is this fact one of those which must justify the distinction, by which the human body is considered as divided into two parts, right and left ?

Another remark I would make in relation to the parotid. If I had not perceived the swelling, which fixed my attention, I should not have interrogated our patient upon the subject, and I should have remained in ignorance both of his pains, and of the time the disease began. What would have happened with regard to the parotid, happens every day with reference to the other viscera, and shows the necessity of asking very often about all the functions, even those whose organs do not appear to be in a suffering condition, otherwise the most important facts escape us.

I shall speak hereafter of the affection of the kidney, and I now pass to another fact, in which the retrograde progress of the affection is still more advanced than in this one.

SIXTEENTH OBSERVATION.

Chills ; diminution of strength ; diarrhœa, at the beginning ; sudamina, extremely large and copious ; diminution and cessation of symptoms ; gangrenous erysipelas of the left leg ; eschars on the right shoulder and sacrum ; death on *forty-third day*. Elliptical patches in the ileum blue, some ulcerated, others not, some cicatrized ; mesenteric glands, corresponding to them, enlarged, of a violet hue, sufficiently firm, containing pus, &c.

A MASON, æt. 26 ; of a weak constitution, rather liable to colds in head, having been at Paris five months, fell sick July 22d, 1824, and was admitted to the hospital of La Charité on 27th, having kept his bed during the two previous days, and having ceased work four days before. In the commencement, headache ; great depression of strength ; the skin was intensely hot, without previous chills ; perspiration soon followed ; thirst ; anorexia ; slight pain at epigastrium ; diarrhœa. These symptoms continued, the pain in head, during two days ; the pains at the epigastrium and the diarrhœa, during four ; the perspiration likewise, re-appeared at irregular intervals. Some buzzing in ears, and epistaxis, during the first two days. The patient had taken, for drink, rice water mixed with wine.

28th. Face covered with sweat, slightly flushed ; slight stupor ; mind dull ; answers, slowly but correctly given ; drowsiness easily overcome ; eyes languid, not injected ; sometimes buzzing in ears, without deafness ; flesh flabby ; motions slow and difficult ; tongue moist and of a bright rose color at edges, dry and red at centre, easily protruded, but when once thrust out, patient suffered it to remain locked between the

teeth for some time ; abdomen of natural shape, not pained by pressure ; skin hot ; numerous sudamina upon abdomen and chest ; pulse at ninety-five, not full ; respiration slightly quickened ; respiratory murmur stronger in front, at right than at left, and behind, it was exactly the reverse ; patient lay generally upon his back.

(Lemonade twice ; whey twice ; emollient enema ; blisters to legs.)

There was nothing remarkable and no diarrhœa, during the two following days. On 31st, aspect nearly the same as on the previous days ; constant inclination to sleep ; passed urine in bed, went twice to the close-stool, in order to have dejection ; tongue dry, red, and coated thickly in the centre ; teeth and lips not less encrusted ; abdomen not tender on pressure ; some rose lenticular spots upon its surface ; the perspiration continued, and was very foetid ; sudamina, more numerous than on the first day ; respiration moderately accelerated ; respiratory murmur pure on both sides.

(Blisters to thighs ; allow those on legs to heal.)

Aug. 1st. Face more natural, less red ; tongue a little moist and whitish, nearly denuded towards its back part ; pulse rather full, with a double beat, somewhat soft ; a rather copious eruption of spots, of a rose color and lenticular shape, with sudamina, which were larger and more numerous than the day before, upon the whole of the front part of the abdomen.

2d. Slight stupor ; hearing, a little dull ; buzzing, at times, in ears ; answers slowly returned, but correct ; eyes not injected ; tongue dry and coated, though patient had, but a moment before, taken drink ; slight pain at umbilicus ; abdomen rather contracted than distended ; some liquid dejections ; pulse ninety, sufficiently strong ; skin moderately warm ; copious sweat ; numerous sudamina on abdomen and thighs,

on their upper parts especially, from one to two lines in diameter. In the intervening spaces, the epidermis seemed merely laid upon the dermis, for, a slight rubbing, with the extremity of the finger, on any part whatever of the abdomen, was sufficient to raise the epidermis, and the parts underneath were left in a moistened state.

(Enema of flaxseed-tea ; lemonade, twice.)

From the 2d to 7th, the drowsiness increased, but there was neither headache nor delirium ; his eyes were somewhat injected on 5th ; tongue alternately dry and moist, red at edges ; intense thirst ; abdomen flattened ; dejections not frequent, (one to two during the day.) The lenticular rose spots were extremely numerous, and occupied the fifth part of the surface of the abdomen on 5th ; were less numerous on 6th ; the heat of the skin was always greater than natural ; copious perspiration ; sudamina always large and numerous ; pulse moderately accelerated, a little vacillating.

(On 3d, was ordered, besides three quarts of lemonade, one of the infusion of cinchona ; gum potion, with two drachms of extract of cinchona ; aromatic fomentations. On 5th, was added one drachm more of extract to the potion, likewise a half bottle of wine, which was continued during the following days, the patient experiencing, moreover, no manifest effect from this medicine.)

The blisters to the thighs and legs, having a bad aspect, were dressed, during two days, with camphorated cerate, and redness and severe pain were excited by it, which was alleviated only by returning to the simple cerate. On 8th, pain and a swelling in the right groin ; vivid redness over a small extent on left thigh, without any evident increase in its size ; similar redness extending wholly around right thigh, with the excep-

tion of a space one inch and a half broad, and this redness was accompanied by a slight swelling. The blisters, on this side, were nearly dry, the others entirely so; his face was natural; intelligence perfect; tongue red, moist; thirst intense; rose spots on the abdomen still numerous; skin very hot; pulse very much accelerated and small.

(Same prescription.)

9th. Increase in size of the left leg, especially at its lower part, where it was œdematous. From 10th to 12th, gradual extension of the erysipelas, even to the middle of the thigh, various shades of red over leg, which was very much swollen; elevations and hard spots on the skin, where the redness was most vivid.

On 13th, the size of the leg was equal to what it is in the greatest degree of œdema, and upon the bluish spots of the foot, observed on the previous day, the epidermis was raised. On 16th, these spots were of a yellowish white color, and around them, the skin was slightly raised, and of a light red color. On 17th, a small quantity of pus of good quality escaped from about the eschar, and it became every day more abundant; the skin separated, in the same gradual manner, from the eschar, which came off, on 20th, in strips; the pus then was extremely foetid, and many of the tendons were exposed. On 22d, the separation of the eschar was nearly complete; 23d, the annular ligament was laid bare; 29th, the whole of the short extensor muscle of the toes was seen, and, on this day, as it had been from the 25th, the pus was serous, and the ulceration continued to become larger.

At the same time that the progress of the erysipelas continued, the skin and subjacent cellular tissue presented, in other points, alterations, not less grave. There was on 26th, at the bottom part, and a little to the right of the sacrum, a manifest

fluctuation, and a superficial ulceration, from two to three inches large ; a similar ulceration existed in the neighborhood of the coccyx, and the region of the great trochanters was of a vivid red. On 22d, the skin was entirely destroyed for the space of an inch, about the left shoulder, and this wound, like that of the sacrum, increased continually until Sept. 3d, the day of his death.

During this period, of nearly one month, the drowsiness returned only at intervals, and there was delirium during the night of 12th to 13th only, and very nearly, with that exception, the patient's mind was always sufficiently clear. The features were not very much changed until the day before death ; the strength grew less gradually, and July 26th, the patient partook of soup, leaning upon his right elbow, without any haste. His tongue, red and moist at its circumference, from 9th to 13th, was, after this epoch, in a natural state. There was a good deal of thirst until 17th, but afterwards it was not troublesome. He had neither nausea, vomiting, nor colics ; the dejections were liquid or pultaceous, from three to four per day, from 9th to 13th, less frequent, afterwards, generally every day, and they became more and more consistent, and sometimes even they were natural. The pulse, slightly accelerated on 14th, was generally about ninety-four until the 21st ; after that it became smaller and feebler, and was commonly at a hundred and ten. There were, at different intervals, turns of sweating or very great moisture of the skin, and sometimes, after the 20th, there was considerable heat in the evening. The sudamina, upon the ham, were enormous, on 13th. Expectoration, more or less greenish, thick, abundant from 17th to 20th, and from time to time, patient had pains in the chest, but this part resounded well, on percussion, throughout its whole extent. On 25th, patient had severe pains under right mamma, and mucous

râle, or crepitation, apparently from large bubbles, was heard in the same part. On the evening of 27th, sputa of a pale red color, not viscid; fine crepitation on right side; but percussion still gave a clear sound; and thus it continued during the following days.

Sept. 3d, two hours and a half before death, the arms and forearms of our patient were cold, the lips colorless; the face had the appearance of suffering, the respiration was embarrassed.

The lemonade and aromatic fomentations were continued; an infusion of cinchona, acidulated, and two glasses of wine until the 25th. On 21st, the patient ate rice fritters (*cremes de riz*); his ulcerations were dressed with camphorated cerate, mixed, during four days, with an equal part of powder of cinchona.

Opening of the corpse twenty-two hours after death.

EXTERIOR. — Limbs flaccid; the inguinal glands of left side, were four times their usual size, and of rather a vivid rose color, but of good consistence. All the dorsal portion of left foot was exposed, was greyish, and covered with a false membrane, which was soft, and could not be raised in strips; the tendons, laid bare, were healthy and of good consistence, and were more easily separated from the muscular fibres, to which they were united, than is usual. The skin was separated from the subjacent parts, about the wound, generally for the space of an inch, and behind, and even to the middle of the calf of the leg; it was greyish and thickened in these parts. The vessels which adhered to its internal surface, were of a good consistence. A similar separation had taken place, though not to so great an extent, about the left shoulder; it extended only to

a little above the axilla, and the axillary glands were greater in size than usual, but were equally so on both sides.

HEAD. — The *arachnoid*, over the upper part of the brain, was thickened and opaque; the granulations in the arachnoid, near longitudinal sinus, were white and numerous; considerable effusion of serous fluid between arachnoid and pia mater; a spoonful of the same liquid, perfectly clear, was in each one of the lateral *ventricles*; two at the base of the brain. *Cortical* substance somewhat pale; medullary not injected, but was a little less firm than natural.

NECK. — *Lymphatic glands*, much larger than usual. *Larynx* and *trachea*, slightly tinged with red.

CHEST. — *Heart*, somewhat pale; otherwise perfectly healthy. *Aorta*, spotted with red, in different parts. A little less than a quart of serous fluid, of a red color, in the left *pleura*. The *lung*, corresponding to it, free from adhesion, and a little heavy, in consequence of a moderate quantity of red fluid, not frothy, in the substance of its lower lobe, whose natural texture, however, was still distinct. Its upper lobe was, throughout, generally of a pale red hue; but, at its apex, it was yellowish, in consequence of an irregularly rounded tumor, about one inch in diameter, composed of a kind of filamentous substance, which, in one point, was continuous with the pulmonary. In this substance was a reddish, almost pulpy material; and surrounding it was a thin stratum, of yellowish pus, contained in a soft, false membrane, of the same color, resting upon another more firm, which was greyish, and one quarter of a millimeter thick, and this last lined the surrounding pulmonary tissue, which was perfectly well. The right *pleura* was covered, over nearly its whole extent, by a false membrane, which had little consistence, whitish or reddish, and contained more than a quart of clear red fluid.

The lung, of the same side, had a slight congestion of blood, and commencement of inflammation at its apex, and near its anterior edge, two tumors, half an inch in diameter ; one, like that in the left lung ; the other, nearly wholly empty, and containing only a small quantity of yellowish fluid.

ABDOMEN. — *Œsophagus*, natural, except its muscular membrane, which was about three quarters of a line thick, that is, was much thicker than usual. *Stomach*, of moderate dimensions, and contained a yellowish liquid. Its mucous membrane was white, tinged with light red, in the great cul-de-sac ; greyish, mameloned, in other parts where it was covered by a viscid mucus ; this membrane broke very easily when strips were raised along the small curvature, and it was somewhat thickened along the greater one. It was of proper thickness and consistence in every other part, save where mameloned, and there, were several spots, which were thinner than the adjacent parts. The *small intestine* was of ordinary size, greyish and bluish, externally, principally in part corresponding to the elliptical patches of the ileum ; it contained a large quantity of yellow mucus. Its internal membrane was thin, with grey points in it ; it was greyish throughout its whole extent, and, except in its three last feet, where it was softened, it had its usual consistence. The *elliptical patches* were narrow, elongated, bluish, visible in the ileum only, and in the three feet next the ileum, nearly all of them were *ulcerated*. The ulcerations, from two to five on each patch, were from two to three lines in diameter ; in some, the muscular membrane was exposed, and the edges were separated from the subjacent tissue, for the space of more than a line ; near the cæcum, the parts, around some of them, were depressed, and their centres were covered by an extremely thin and, as it were, serous membrane, which was continuous with the adja-

cent submucous membrane. The last two inches of the ileum were a little swollen, of a bluish grey color, and presented the appearance of one single patch, upon which were six small ulcers. By some of them, the muscular tissue had been laid bare ; the others were cicatrized, as those just described. The solitary glands were reddish, of the size of a millet-seed, irregularly rounded, and were rather numerous in the four last feet of the intestine. The mucous membrane of the *large intestine* was a little softened in the left part of the colon ; rather red in the rectum, but was of proper consistence and thickness every where else. The rectum contained a great quantity of moulded fæcal matter ; it was pultaceous and much less abundant every where else. The *mesenteric glands*, corresponding to the elliptical patches of the ileum, were enlarged, bluish, somewhat softened, and a little pus, or yellowish pultaceous matter, or only points of this color, were seen in them. The glands of the *mesocolon* were small and bluish ; the lumbar, more or less enlarged, and of the same aspect. The *liver* was flabby, and of a little darker hue than natural ; the bile in the *gall-bladder* was very fluid and not very abundant. *Spleen*, small and healthy ; *pancreas*, greyish and bluish throughout ; the whole *urinary apparatus* was in a natural state.

Without returning, very minutely, to the symptoms, experienced by our patient, I would remark that they were those of the worst cases of typhus fever ; that the first of them marked the intestine as the seat of the affection ; these afterwards disappeared, and an erysipelas of the left leg supervened. Likewise, if in the two preceding observations, in which the typhoid symptoms continued until death, the elliptical patches were beginning to undergo a process of cure, they were much

more advanced towards a cure, in the case now before us, in which the symptoms ceased several days before the fatal termination. For, in addition to the bluish color of the patches and the depression about the borders of some of the ulcers, as seen in the last case, there was, in the present one, upon many of the small ulcers, nearest the cæcum, a thin, shining pellicle, serous, as it were, forming a true cicatrix. There was no reason, moreover, for believing that these cicatrices were formed before the disease, for their size was equal to that of other ulcers, which were not cicatrized, and, moreover, they were found on the patches, which must have been the first ulcerated, and consequently would be the first cicatrized.

Although I have not noticed either the thickness, or the consistence of the patches of the ileum, and although, in this respect, the description of the small intestine is incomplete, we cannot doubt that, at a certain period of the affection, these patches were very much inflamed, for, whether ulcerated or not, they all had the same bluish color. On the other hand, the mesenteric glands were, without exception, more or less enlarged, of a purplish tinge, softened, and some of them contained pus, and thus afforded unequivocal marks of an inflammation, which had, probably, been consequent upon that of the patches ; so that the blue color of these last, must be considered as one of the consequences, more or less remote, of some inflammation which had existed in them.

If it is incontestible that the affection, which we are now examining, has been the occasional cause of erysipelas, we must confess that there is a great disproportion between the cause and the effect, and nothing demonstrates better, than cases like the present one, the existence of predisposing causes, without which, it would be impossible to understand any thing, there would be nothing but a tissue of contradictions. Without these

predisposing causes, how can we conceive that, in the course of the same disease, under, apparently, analogous circumstances, the mucous membrane of the stomach should be affected in one case ; in another, the skin ; in a third, the mucous membrane of the pharynx, &c. ? One very remarkable circumstance in this case, was the small degree of influence the erysipelas exerted upon the general state of the patient, notwithstanding the severity of the affection. We must not forget, with regard to causes, that the patient, having not had violent delirium, was not submitted to any restraint, consequently, we cannot attribute the erysipelas to any external cause, to any kind of compression whatever.

Death, though rendered inevitable, by the progress of the erysipelas, would doubtless have happened some days later, but for the developement of acute pleurisy on the right side. The yellowish tumors in the lungs had, likewise, their share in producing a fatal termination of the disease. I have been unable to find any thing similar, except in one patient, who died of an acute affection, different from this of which we are now treating, and in the actual state of science, it seems to me to be impossible to explain the nature of these tumors, and, consequently, whether they were anterior to, or came on after the commencement of the chief affection ; but this last supposition seems to me the most probable.

I shall terminate these remarks, by observing that the state of the brain was quite analogous to that, found in patients who die of chronic affections, and was very different from that observed in patients in whom the disease is more rapid in its course, it being in these last cases, much less firm, and containing more serous fluid than in this case, either in the ventricles or under the arachnoid.

The following observation, by giving us examples of larger and more numerous cicatrices, will be, as it were, the complement of what has been already said.

SEVENTEENTH OBSERVATION.

Diarrhœa ; meteorism ; delirium ; then, great prostration ; abscess of the neck ; apparent convalescence on twenty-second day ; return of delirium from thirty-fifth to *fortieth* ; death on *this latter day*. Patches of the ileum cicatrized ; mesenteric glands, corresponding to them, of considerable size, of a greyish slate color, moderate consistence, slightly softened ; mucous membrane of the colon, very much softened ; tumors in the liver, some of which were purulent ; others, not so ; false membrane upon the dura mater.

AN errand-man, æt. 21, of a sufficiently strong constitution, moderate degree of flesh, had been sick eight days, when he was admitted into the hospital of La Charité, December 2d, 1822. He had been able to walk there without assistance, and on his arrival his mind was perfectly clear, but he was seized in the evening with violent delirium, left his bed during the night, and the attendants were obliged to restrain him by means of a straight-jacket. The affection had commenced with a somewhat severe headache, accompanied by fever.

3d. Face, slightly flushed ; slight injection of integuments ; senses, perfect ; disinclination to speak ; no pain in any part ; tongue, dry, blackish ; abdomen, meteorised, not pained by pressure ; pulse, regular, seventy-eight, without any peculiarity about it ; skin, soft, moist and warm ; dry cough at times ; respiration hurried ; respiratory murmur, pure, and without râle.

(Venesection to $\frac{3}{4}$ xij ; emollient fomentations ; blisters to legs ; whey ; enema.)

Two hours after the venesection, the patient answered voluntarily many questions, but his answers were sometimes foolish ; his abdomen became still more meteorised, more insensible, if that were possible, to pressure ; the pulse was at ninety.

No dejections ; but urine was frequent and involuntary ; the delirium ceased during the day, and re-appeared during the night, rather less severe than during the preceding one, and of the same character. 4th. At the time of visit, slight stupor ; appearance of astonishment ; two hours afterwards, while asleep, his face was sufficiently natural, but from time to time, some convulsive motions of the lips were observed ; the pulse was but slightly accelerated.

The patient had a little delirium during the day, complained much of his abdomen, and dejections were procured only by the use of enemata ; the night was tranquil. On 5th, his head was still slightly *embarrassed* ; his mind, otherwise, was clear ; his features, a little sunken ; tongue, slightly coated, although moist and viscid ; the abdomen very much distended with air ; desire for dejection.

From this period until Jan. 3d, three days before death, I made the following remarks. No delirium ; cephalalgia, but seldom ; exercise of intellect, painful and slow ; rather frequent inclination to sleep. Face, colorless, Dec. 10th ; 11th, the patient answered only by "yes" and "no ;" 13th, he, with great difficulty, stated that he felt ill every where ; he seemed as if he had lost all strength, and from the colorless aspect of his face, one would have said he was near death. He was very nearly the same during the following days, and from 18th to 23d, he so disliked speaking that he signified his wants by signs alone. On 23d, he was lying with his knees half flexed, in the attitude of a man who is resting from long fatigue. He spoke much more firmly on 26th, and, on 31st, far from being

very weak, he refused stoutly to take the medicine ordered for him. On Dec. 1st, a swelling in the region of the right parotid, was observed, which made, at first, but little progress, but considerable from 14th to 18th, so that, on 18th, an opening of the tumor was found necessary, and from it was discharged a great quantity of pus, of a greenish color, without odor. The incision was made, and the patient did not seem to suffer from it, in the least. He had from two to four dejections during the day, from 15th to 20th; they were numerous and involuntary during the night, from 19th to 21st; afterwards, they were of rare or of daily occurrence, of good consistence, and the same in quantity as before, from 25th to 31st. The right iliac fossa was the seat of a rather severe pain, Dec. 13th; and, from 24th to 31st, the abdomen, generally, and especially its flanks, were more or less painful on pressure. It was the same with the epigastrium, from Dec. 28th to Jan. 2d, and there was a vomiting of bile, during the night, for the same space of time. The tongue, thickly coated, blackish, somewhat thickened and moist, from Dec. 8th to 11th, was more natural and not coated afterwards, and became dirty again, only during the last four days of the affection. The pulse beat from eighty-eight to ninety-six times per minute, from 11th to 17th; it was calmer on 20th; more frequent, on the contrary, on 25th and the following days. The respiration was moderately accelerated, and respiratory murmur, at times, was quite pure, and totally free from sonorous râle.

Jan. 3. At the morning visit, the face was cadaverous, as it were, although the patient answered questions with animation, and asked for wine. In the evening, he had delirium, and, except some lucid intervals, during which he was heard to say that he was growing worse, and that he should die, this delirium, with constant stammering, continued until death.

On Dec. 10th and 16th, blisters were directed to be applied to the lower limbs ; the infusion and an enema of cinchona on 18th. On 20th, a potion, with three ounces of wine of cinchona, two ounces of the syrup and two drachms of the extract of cinchona, which were continued until the patient was troubled with vomiting, when he began to take seltzer water. He drank also, from 20th to 30th, two glasses of wine, during the day, and took the yolk of egg mixed with water and sugar, or small quantities of beef-tea.

Opening of the corpse thirty-two hours after death.

EXTERIOR.—No purplish stripes, but a yellowish tint was spread over the whole skin.

HEAD.—Five or six moist and polished filaments united the two folds of the *arachnoid*, lying above the anterior lobes of the brain. A yellowish, half liquid, membranous substance covered a portion of the upper part of the *dura mater*. Slight traces of effusion underneath the arachnoid ; a spoonful and a half of serous fluid in each one of the lateral *ventricles* ; and somewhat more in the occipital fossæ. The *brain* was somewhat less firm than it is naturally.

NECK.—The abscess, which had furnished the pus, was limited, superiorly, by the upper row of teeth, and inferiorly, by the lower edge of the lower jaw ; at the right, by the sterno-cleido-mastoideus muscle, and the pterygoideus externus ; at the left, by the pharynx ; in front, by the jaw and the cellular tissue of the neck ; posteriorly, by the muscles, which are attached to the mastoid process and vertebral column. Its parietes were greyish ; the muscles, which were involved by it, were without any sensible alteration, and save a small abscess, about the size of a pea, the parotid itself was healthy.

CHEST. — *Lungs*, without adhesions, soft. The right had, at its apex, a tubercle about the size of a small nut ; the left had many of its bronchial tubes dilated, even to their last ramifications, which were four lines, or a little less, in size. No liquid in *pleuræ*. *Heart and aorta*, healthy.

ABDOMEN. — *Æsophagus*, natural. *Stomach*, of moderate size. Mucous membrane was reddened, either in minute spots, or these spots, being united, formed a continuous, red net-work appearance, in the great cul-de-sac, especially, near the cardia. It was somewhat softened in this last point only, and was of a proper thickness throughout. Nothing remarkable in the *duodenum*. Mucous membrane of the *small intestine*, natural, save in the last half of the ileum, where were three kinds of lesions, which I will now describe ; 1st, many *crypts* or small glands, generally miliary, and of a whitish color, adherent to the submucous tissue, among which were many a line in diameter, and which had commenced ulceration ; 2d, *elliptical patches*, whitish, with minute blue points on them, opposite the mesentery, thickened, as much in consequence of the development of the mucous membrane, which was a little softened, as by that of the subjacent tissue ; 3d, *other patches*, of the same form, nearer the cæcum, from one to two and a half inches in their greatest diameter, greyish or bluish in color, of a smooth, polished, brilliant aspect, more or less depressed, and at the circumference of most of them, was a narrow edge, a little prominent. One of them, nearest the stomach, was evidently composed of two parts, one, towards this organ, having the same structure as the first patches ; the other, smooth, brilliant, depressed, as those of which we are now speaking, and, like them, deprived of its mucous membrane. The mucous membrane was entirely wanting, near the circumference of this patch, and adhered, in this point, to an extremely thin

pellicle, having the aspect of serous membrane, and which covered the muscular coat, and was continuous with the submucous tissue of that portion of the patch, which remained undestroyed. Two of these patches presented, in the middle of the cicatrized portions, remains of mucous membrane, which had escaped destruction, whilst, in the centre of some others, the muscular coat was exposed over a small extent. The mucous membrane of the *large intestine* was very much softened, and of moderate thickness. The *mesenteric glands* were of considerable size, of a greyish slate color and of moderate consistence. The consistence of the *liver* was natural, its color a greyish purple, which, fifteen or eighteen lines from its free edge, had over the space of four inches, a mottled yellow appearance, corresponding to a tumor of the same extent, formed by a yellowish, clear, inodorous pus, which was contained in an areolar parenchyma, of a paler hue. In the small and middle lobes were six tumors, that were somewhat firm, of a yellowish tint, having not the least trace of pus in them. Their areolated structure was demonstrated by pale lines crossing one another, in the form of the areolæ of the tumor which had suppurated. About this and the others, the liver was of a brownish color, for the space of two to three lines. The *biliary ducts* were healthy. The bile of the *gall-bladder*, red and somewhat thick. The *spleen* was more than three times its wonted size, and a little softened. The other *viscera* had nothing in them worthy of attention.

The reflections, made upon the preceding observations, apply exactly to this one. For the symptoms of the affection were of the gravest character; the duration of the disease beyond the acute stage, still longer than in the last case; and supposing that, at this period, the elliptical patches of the ileum

had undergone an alteration similar to that which has been described in the two first chapters, reasoning from analogy, one would have anticipated, finding them in a very different state, at the death of the patient. What one would have anticipated really took place. Although the elliptical patches in second half of the ileum, were not in a healthy state, and many of them were thickened, still their consistence was but slightly different from that which is peculiar to them; now this is not the case in the acute period. The others were of a greyish and bluish color, polished, brilliant with depressed surfaces, covered with a very thin pellicle, serous, as it were, which occupied the places of the cellular and mucous tissues, which had been destroyed. They, in a word, had cicatrices upon them. And, as if to make this still more apparent, one of the patches had its usual structure, or very nearly so, at one extremity, and at the other, the polished, brilliant and moist appearance, we are now speaking of; whilst, at the centres of many of the patches, that were cicatrized, were seen remaining minute portions of the mucous membrane, which had escaped destruction; or, as in some, the muscular coat was exposed over a small extent. And, as I have already remarked, cicatrices were not found on all the patches, upon which there had been ulcerations, but only in the neighborhood of the cæcum, where the ulcers were first formed; that is to say, nature followed, in its process of cure, the same order it adopted for destruction.

The state of the mesenteric glands tends to support what I have said; for their size supposes a previous acute, but not a long continued inflammatory affection of the elliptical patches corresponding to them; and the slight degree of softening, the greyish, slate color of the glands and patches, indicated that this inflammation was retrograding.

Excepting the mucous membrane of the colon, which was very much softened, the viscera generally had more consistence of texture than is usual in patients, who die in the acute stage of the affection, as may have been seen from some of the previous cases. And it may be asked, if it be not possible that softening of the different organs may take a retrograde course, as that of patches does, and if this did not actually happen in the present case. I shall examine this point hereafter.

In reference to the causes of death, in the present case, it is proper to remark that, with the exception of the morbid condition of the elliptical patches, in the last half of the ileum, the mucous membrane of the small intestine was nearly healthy, and we must seek for these causes in the secondary lesions, among which, the softening of the mucous membrane of the colon takes the first place. After this, come the abscess and tumors in the liver, the abscess in the neck, the softening of a part of the mucous membrane of the stomach, and a kind of false membrane, which was found on the internal face of the dura mater, whose formation was probably commenced during the last days, or even on the very last day of the life of our patient.

Moreover, no symptom, except the icterus, could have caused any suspicion of a lesion in the liver, although that, which did exist, was considerable, and perhaps, of long standing, and, without doubt, was anterior to the epoch, at which the patient appeared to become convalescent. There was, at the first glance, a strong resemblance between the above-mentioned tumors and tubercles, but they really differed very much ; the one, which was suppurated, by its areolar or cellular tissue ; the other, which was not ulcerated, by the evident marks of these areolæ, as shown by their color, which was slightly different from that of the remainder of the organ.

As cicatrization took place rapidly, in the present case, we may conceive that it may follow, in certain cases, a much slower course, and that we may not be able to find any traces of it even at a period sometime after the beginning of the convalescence, in patients who die accidentally. We shall see some examples of this fact, in the course of this work, and the following is one of the most remarkable.

EIGHTEENTH OBSERVATION.

Diarrhoea ; afterwards, violent delirium, during six days, which was slight, of long duration, or momentary, afterwards ; finally, convalescence, and then, violent relapse ; death on *sixty-fifth day*. Patches, thickened, pale, at first ; red and ulcerated near the cæcum ; mesenteric glands, enlarged, of a purplish hue, moderately firm near the cæcum ; lower lobes of the lungs, splenified and hepatized.

A CARPENTER, æt. 21, with auburn hair and similar complexion, of a large, tall, and strong frame, had been at Paris more than twenty months, and ill fifteen days, when he entered the hospital of La Charité, October 1st, 1823. He had walked there accompanied by one of his companions, and was seized with violent delirium the following night.

On 2d, at the visit ; patient was calm, but his ideas were incoherent ; his conversation without meaning, unless when spoken to in relation to his disease ; leaden color of skin ; senses, perfect ; no headache ; tongue, reddish at circumference, whitish, in centre ; slight redness of velum palati, and in pharynx, upon which were seen some white patches ; deglutition, however, was easy ; moderate thirst ; abdomen, meteorised ; dejections, frequent, as they had been during

eleven days past ; pulse had a double beat, and was at ninety-six, fuller before than after the bleeding ; skin, moderately hot ; no lenticular rose spots.

(Emulsion with syrup of gum ; venesection to § xvi ; ice upon head.)

Delirium continued, and, as in the evening, the patient was perpetually getting out of bed, he was confined there by means of a straight jacket. At morning visit of 3d, having been restrained constantly in the same manner, he refused to drink, or show his tongue, saying that he had none ; he was alternately serious and gay, and often he was coarse in the remarks he made. The pulse was at a hundred and four ; the blood, drawn on the previous evening, had neither buff nor cup.

(Sweetened emulsion, twice ; sweetened barleywater, twice ; twenty leeches behind each ear ; flaxseed enema.)

Delirium, quiet during the day, very noisy during the night, the patient calling aloud, crying, and speaking continually of his situation. Slight stupor on 4th ; face, a little red ; incoherent remarks ; patient scolded and tried to free himself from the straight jacket ; frequent gaping ; pupils, dilated ; tongue, dry, but not of a deep red, evidently thickened ; palate, coated over very thickly ; abdomen, of good shape, not metèorised ; pulse, at a hundred and twenty ; respiration, moderately accelerated.

(Emulsion ; venesection ; thirty leeches behind the ears ; ice upon head.)

These symptoms underwent no change that was appreciable, during the day, and as they continued on the 5th, at the hour of visit, forty leeches more were ordered to the ears, and eight pounds of ice upon the head.

Notwithstanding the continuation of the delirium, the patient recognised his relations, who came to see him in the morning ;

he was quiet all night and had one dejection, containing a lumbricus. On the morning of 6th, he assured us that he did not suffer any where, not even in his head, and asked if he could not go to work a little ; his tongue was dry, not red ; his pulse feeble, at a hundred and ten.

(Petit-lait, tamarin ; sweetened barleywater.)

From this moment until the 24th, whilst the convalescence seemed to be going on, I observed as follows. There was generally a little delirium, ordinarily, in the night or in the evening, never at the morning visit. On the 7th, the physiognomy was sufficiently natural ; it was more so on 8th ; and 9th, patient observed what took place about him and smiled sometimes. The expression of his face was much less good, on 15th, and from 20th to 24th, he was affected with slight stupor ; the tongue was dry and more or less thickly coated, until 16th, afterwards moist and variable in color, sometimes it was more red than natural. The dejections, rather frequent until 13th, more or less so afterwards, and, on the morning of 14th, after rather a restless night, there was a very abundant alvine evacuation, in which was a great quantity of blood, but none appeared afterwards. A little meteorism was observed from 15th to 18th, but before and after that epoch, the abdomen had its natural form, and was never painful on pressure, except during the 10th, when the patient suffered in the right iliac fossa, he himself calling our attention to this part. The pulse was always very much accelerated, and varied from one hundred and four to ninety, it was regular, and generally sufficiently strong. The heat of the skin was moderate ; sweating, not frequent ; large sudamina about axillæ on 19th. Cough, not frequent ; respiration, thirty to forty times per minute ; respiratory murmur mingled with a dry, sonorous and mucous

râle. The diluting drinks and flaxseed enemata were continued.

On 24th, the patient answered well all questions, and as usual did not ask any ; his face had still not a healthy aspect, his tongue was moist, a little red, and covered with white patches ; his abdomen was not painful on pressure, and was of natural form ; his pulse, feeble, at eighty-eight ; the respiratory murmur was mingled with dry and sonorous râle, principally at the left side ; feebleness, not great.

From that time until Nov. 12th, no delirium ; sleep, generally calm and good ; gradual, though very slow, return of strength ; face, nearly natural, save some spasmodic motions of lips on 11th, when patient spoke. The tongue, always moist, had a whitish appearance ; thirst, moderate ; some appetite until Nov. 1st, and, on that day, for a time it was lessened, so that on 4th, the patient took only half his usual portion of food ; and afterwards he was ordered to take rice fritters and beef-tea, in consequence of a slight diarrhœa, which came on at that time, and of an acceleration of the pulse, which beat from one hundred and four to one hundred and ten per minute, from 6th to 12th, instead of from sixty-two to seventy-two, as from Oct. 25th to Nov. 3d. The heat of the skin was proportioned to the state of the pulse, and sweating was always slight and of rare occurrence.

From 12th to 21st, the day of his death, the delirium was constant. It began soon after the reception of a letter addressed to the patient, relative to the conscription, and as he was continually striving to get out of bed, he was retained there by means of a straight jacket. His face had more or less the marks of severe disease, it was truly cadaverous on 20th ; his eyes were injected on 16th, but were quite animated on 17th. The tongue was alternately dry and moist, red at

first, greyish, afterwards. The patient often refused to drink, although there was no obstacle to deglutition ; he had at times some pains at the epigastrium ; nausea on 12th, after a tonic potion ; colics on the same day, but not afterwards. The dejections were numerous and always involuntary ; the abdomen flat, and was not painful on pressure. The pulse had a double beat, from one hundred and sixteen to one hundred and eight, from 12th to 15th, and at a hundred and twenty-eight, but not thread-like on 20th ; heat of skin was generally more than natural.

On 10th, rice water sweetened with syrup of quince was ordered ; and a tonic potion with wine and syrup of cinchona, each two ounces. On 11th, a blister to back of neck. On 13th, besides the tonic potion, a decoction of simarouba. On 15th, some drops of muriatic acid were added to the drinks and enemata, and two scruples of diascordium to the potion.

Opening of the corpse twenty-two hours after death.

EXTERIOR. — Very great emaciation ; destruction of the skin of the legs, where the blisters were applied.

HEAD. — *Arachnoid*, thicker and much firmer than usual ; *brain*, of a good consistence, a little injected ; one spoonful of limpid serosity in each lateral *ventricle*.

NECK. — The *pharynx*, *epiglottis*, *larynx* and *trachea* were in a healthy condition.

CHEST. — *Heart*, healthy. *Lungs*, not adherent ; inferior lobes, heavy, of a reddish blue color, hard, granulated, and more hepatized in many points, and carnified, as it were, in others, through a large extent.

ABDOMEN. — The mucous membrane of the *œsophagus* was of a yellow color near the cardia, but it otherwise presented

nothing remarkable. The *stomach* contained a rather large quantity of bile ; its mucous membrane was colored by it in the great cul-de-sac, and had, in other parts, a white tint, mingled with a rose color ; it was every where of a proper consistence ; was neither mamelonated nor ulcerated. Its muscular coat was a little thicker than usual. The *small intestine* had much yellow mucus in it, throughout its whole extent. Its mucous membrane was white, except in the four feet nearest the cæcum, where it was of a deep red color ; it was of proper thickness and consistence, except some small blackish eminences, in this last part, formed by the mucous membrane, and by the submucous tissue, more or less reddened, and on these, the former was either very soft, or was entirely wanting. The *elliptical patches*, opposite the mesentery, were visible throughout the whole extent of the tube, larger, thicker and nearer to one another, according to their proximity to the cæcum, very near which they were from a half a line to a line thick. Though generally pale, they were red in this last part, and composed of the submucous tissue, which was red as the mucous membrane, and of this last, which had some small ulcers upon it. Two of them, the largest and nearest the cæcum, were nearly a third of an inch in size, with pale, depressed edges, and by them the muscular texture had been exposed, without leaving in it any appreciable alteration of structure. The *large intestine* contained a moderate quantity of fecal matter ; its mucous membrane was slightly softened and of a greyish color, save in the rectum, where it was red and a little ulcerated, two inches above the anus. The *mesenteric glands* were enlarged, of a purple color, and of moderate consistence near the cæcum. The *liver* was a little larger than usual, and somewhat friable also ; otherwise it was healthy. The bile of the *gall-bladder* was rather abundant,

thick, and of a clear yellow color. The *spleen* was nearly of double its usual size, and a little softened. Other *viscera* healthy.

Let us review the principal circumstances of this observation. During the first fifteen days of the disease, the patient suffered from a rather severe diarrhœa ; he was admitted afterwards to the hospital. On the evening of his admission, he had violent delirium, which continued during three days, of the same character, notwithstanding many copious evacuations of blood were made. Then it diminished and ceased, but it returned at different times, during eighteen days ; the other symptoms, and particularly the acceleration of the pulse, were always marked. These eighteen days having elapsed, the delirium ceased entirely ; all the functions of the body became better ; the appetite returned ; the feebleness diminished ; the dejections became less frequent ; the patient took some little exercise, and ate half the usual portion prescribed for those fully convalescent. After twelve days, passed thus, the diarrhœa returned, the pulse became accelerated ; and, on sixth day from this relapse, the patient received a letter, which appeared to cause a deep impression upon him, after which he was taken with violent delirium, and that continued until death, which took place nearly two months after the first symptoms, and, at the autopsy, the elliptical patches were evident through the whole course of the intestine, and their number, and their thickness increased from the duodenum to the cæcum ; they were red, in the last four feet, were pale in every other part. Many of them were a little ulcerated, and two of them, nearest the cæcum, had on them, some ulcerations which were a little larger, with pale and depressed edges. So that, although the affection did not prove mortal until sixty-five days after its

commencement, and convalescence seemed to be decided for more than a week, none of the ulcers had begun to be cicatrized.

In the natural state of the elliptical patches, they are not seen, or are seen with difficulty, throughout the whole length of the intestine, especially near the duodenum. In this case, however, although they were pale, they struck the eye, at the first glance, probably on account of their thickening, which increased from the duodenum to the cæcum, so that it is infinitely probable that all were more or less seriously altered, during the course of the affection, and, save their thickening, which usually disappears more gradually than the other changes, they had returned, during convalescence, to their usual state.* And, with reference to the ulcerated or not ulcerated patches, in the last four feet of the ileum, must we believe that they always had the same red color they presented at the opening of the body, even when the patient was convalescent? Or, shall we think, on the contrary, that this color was only re-established, during the latter period of the relapse? We could have answered precisely this question, had the consistence of the mucous membrane been noted. For, if this consistence had been sufficiently great, we should have concluded, that the redness was a simple injection, or only a simple stoppage of the blood, during the last moments of existence, or perhaps, the effect of a very slight recent inflammation, but the omission prevents all accurate decision of the question. It is

* One is often obliged to have recourse to hypothesis, when treating of the interpretation of facts in a particular case, and I remind the reader of this now, in order that he may not be surprised at my forming conjectures sometimes, and that he may not think that I shall be as little rigorous, when attempting to draw *general* conclusions from facts. — LOUIS.

only very probable, that the redness had no other origin than those which we have just enumerated. The mesenteric glands, which usually share in the same affection as that, under which the patches to which they correspond, are suffering, did not present any traces of recent inflammation.

If we cannot explain the death of the patient by the state of the alimentary canal, we can from that of the lungs, and, as we shall see hereafter, the delirium likewise had its influence in producing this effect.

SECOND PART.

GENERAL DESCRIPTION

OF

ORGANS.

THIS second part will comprise a description of all the organs, as observed, first, in patients who died of the affection, with which we are specially occupied ; then, in those who have been carried off by other acute diseases ; and, after each description, I shall seek the causes and the character of the lesion described, and the time at which it commenced.

Although I have given, in the course of this work, the histories of fifty patients who died of the typhoid affection, the general description I shall now give, will depend, as will that of the symptoms, upon forty-six cases only, in which there can be no doubt about the real nature of the affection. Of these forty-six patients, ten died between the eighth and fifteenth days of the affection ; seven, between sixteenth and twentieth ; twenty, between twentieth and thirtieth ; nine, after this period. As I shall designate these periods in the course of the work, by the words *first, second, third* and *fourth periods*, I beg the reader not to forget them.

PART II.

CHAPTER I.

ALIMENTARY CANAL.

PHARYNX, ŒSOPHAGUS, STOMACH, DUODENUM, SMALL AND LARGE
INTESTINE.

ARTICLE I.

PHARYNX.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

THE pharynx had generally nothing remarkable about it ; that is, I found it more or less changed in structure in a sixth part of the patients only, or in eight out of the forty-six cases, of which we are now speaking. The most common lesion was ulceration. It was observed in six cases, (Obs. 15, 19, 24, 31, 32, 45), sometimes simple, at others complicated with a purulent effusion in the submucous cellular tissue, or with a false membrane, which extended from the pharynx to the air passages, (Obs. 19, 31). In the two other cases, these latter alterations were the only ones observed either distinct from one another, or in connection.

The ulcerations were, generally, few in number, of an oval or rounded form, or irregular, and their precise limits difficult to

mark. The first were from three to eight lines in their greatest diameter, which was in vertical direction (Obs. 24, 45); the second, from two to three. They were generally superficial, and formed by the destruction of the mucous membrane only, but they were deeper in one case, in which the muscular membrane was laid bare. They occupied the lower part, and generally, both sides of the pharynx; they were sometimes confined to one, as in the case in which the epiglottis was partially destroyed, the destruction was only on one side. At their circumference, the mucous membrane was not sensibly altered, and once only, I saw the submucous cellular tissue, corresponding to the ulcer, separated, for the space of a line, from the muscular coat. The effusion of pus into the cells of the submucous cellular membrane varied in thickness and extent. The following observation is a very remarkable example of this affection.

NINETEENTH OBSERVATION.

Diarrhœa; anorexia; considerable depression of strength at commencement; epistaxis, later; delirium; drowsiness; meteorism; death on *twenty-fifth day*. Submucous cellular tissue of the pharynx, very much infiltrated with pus; corresponding muscular tissue very much thickened; elliptical patches of the ileum, red, softened, ulcerated; mesenteric glands, enlarged, softened, of a red color mixed with a greyish tint.

A WATER-CARRIER, æt. 24, at Paris six weeks, generally thin, with a rather narrow chest, was admitted to the hospital of La Charité, October 16th, 1824, and stated he had been sick twelve days. The affection had commenced with a pretty severe headache, pains in limbs, anorexia, thirst, diarrhœa and

diminution of strength. The patient had ceased labor two days after these symptoms began, and suffered from epistaxis on eleventh and twelfth. He came on foot with one of his friends to the hospital, without much apparent fatigue, and in the full enjoyment of his reason, but he was taken with delirium during the following night, and as he was continually getting out of bed, running through the wards without any covering except his shirt, the straight jacket was made use of.

17th. Face, sufficiently natural ; reason had returned. The patient gave me freely and without hesitation, at repeated examinations, the preceding details, which were confirmed on the morrow by his friends. His tongue was a little gluey and red at the tip, he had not any great thirst ; abdomen, slightly meteorised, not painful even on the firmest pressure ; pulse, sufficiently full, without softness or hardness, at a hundred ; skin not very hot ; the respiration was but little accelerated ; respiratory murmur, free from any râle ; cough unfrequent, as had been the case during the two days it had existed. No sudamina nor lenticular rose spots. Three liquid dejections on preceding evening.

(Whey ; lemonade, twice ; flaxseed enema ; sinapisms to feet.)

The delirium returned one quarter of an hour after the visit, and continued day and night, during which the patient was speaking continually of his occupation. He had two dejections very late in the morning, but on 18th stoutly denied it, when I made my visit ; saying with an unnatural and disagreeable laugh that he had been delirious, but that he was always so even when in good health. His face was sufficiently natural ; his senses perfect ; the other symptoms as before.

(Twelve leeches to neck.)

Many dejections ; calmness ; drowsiness during the day,

delirium during the night. On morning of 19th, the face was of a pale violet red color ; answers, brief but correct ; tongue, moist, a little red at edges ; abdomen a little meteorised, and not painful on pressure ; pulse, somewhat jerking, at a hundred and five.

(Blisters to legs.)

From this moment until death, which took place on 29th, at three, A. M., the symptoms became gradually more and more severe, without any other remarkable change, the drowsiness was constant, or interrupted by the delirium only. From 22d to 25th, the patient left his bed during the night, and always occupied with the duties of his employment, was crying "water ! buy water !" 25th. He answered the questions which were addressed to him, by saying that he was not well, that he had pains in his arms and head, and on the same day, he complained of being unable to use his hands, not perceiving they were confined by the straight jacket. His face was of a violet-red color on 20th, a little less flushed on 24th ; his nose was tense, swollen, and of a deep red on 27th ; not so large, but otherwise the same on 28th. On same day, the knee and calf of the leg were of this color. The tongue, a little moist and red until 25th ; was dry and reddish and somewhat trembling afterwards. He had generally from two to three dejections in the twenty-four hours, and until the 27th, the patient generally went to stool alone. His abdomen, alternately flat or meteorised, was very much distended on 26th. The pulse was from a hundred to a hundred and five per minute, from 20th to 25th, afterwards it was about a hundred and twenty-five, sometimes more, sometimes less ; skin generally not very hot.

The whey and lemonade were continued ; on 28th, an in-

fusion of cinchona, and a tonic potion, into which were put twenty grains of sulphate of quinine. New blisters were applied to the thighs on 26th, and those on the legs, which were bleeding on 24th, put on a better aspect on 25th after having been dressed with camphorated ointment.

Opening of the corpse twenty-nine hours after death.

EXTERIOR. — Nothing remarkable; muscles not sticky, firm, of a good color.

HEAD. — The granulations on the *arachnoid*, (Pacchioni's glands), appeared through the texture of the dura mater; some slight traces of effusion under the membrane, two small spoonfuls of serous fluid in the lateral *ventricles*, none in the occipital fossæ. The *pia mater* was injected; the *cortical* substance of the brain, and especially that of the *cerebellum*, was of a somewhat vivid rose color; the *medullary* had many bloody points in it, but the whole of the cerebrum and cerebellum was of a good consistence.

NECK. — The *pharynx* was of a white color, but without its usual polish; its surface was not quite smooth, but presented an undulated surface as it were. Into the whole of its submucous cellular tissue was effused pus, which was nearly concrete, varying from a line to a line and a half in thickness, becoming less thick towards the bottom of the pharynx. The muscular coat, corresponding to this, was equally thick. In addition to this, there was at about the level of the summit of the epiglottis, on the right side of the pharynx, a rounded *ulceration*, a line and a half in diameter, and by which the cellular membrane, containing the pus, had been exposed. The *larynx* and *trachea* were in a natural state; the ligaments of the *epiglottis* were one line thick.

CHEST. — *Heart*, healthy ; *aorta*, red from its origin to the cœliac artery. General adhesions of the *pleura* of the left side, and the corresponding lung was of a small size and red color, especially at its posterior part, containing very little liquid and almost no air. The right was a little larger, perfectly free from adhesions, firm, sufficiently elastic, nearly of the same color as that of the left, and like it, without hepatization or congestion of blood, such as precedes hepatization.

ABDOMEN. — *Œsophagus*, healthy. *Stomach*, of medium size, situated a little lower than usual, containing a small quantity of turbid and yellowish fluid. Its mucous membrane had a great number of minute points of a red color in the great cul-de-sac ; of a pale rose color, on its anterior face ; greyish, along the great curvature, for the space of four or five inches ; whitish in other parts. It was somewhat thinner than natural in a portion of the great cul-de-sac ; of proper thickness throughout the rest of its extent ; it was, likewise, a little softened, except where it had a greyish tint or white color. *Small intestine*, of usual size. Its mucous membrane was of a slightly rose hue, and very much softened in the last three feet of the ileum ; greyish and of good consistence every where else. In the part softened were twelve *elliptical patches*, which were more softened and ulcerated according as they were nearer the ileo-cæcal valve, so that, in the neighborhood of this last, the mucous membrane was destroyed over nearly the whole surface of the patch, whilst the first were ulcerated to the extent of some lines only. The remaining part was a half of a line thick, and the submucous cellular tissue more or less red and puffed up, and it was destroyed by ulceration, for the space of a line and a half, in the centre of one single ulceration. The whole circumference of the ileum was red, and had an uneven surface for the space of one inch and a half about the

valve, in consequence of the enlargement of those small patches, generally so numerous in this part in health ; but in this case, they were somewhat thickened, not ulcerated. The *large intestine* contained a moderate quantity of pultaceous fecal matter ; its size was a little larger than usual ; its mucous membrane was generally greyish, was red in some points, of a good thickness, and of a consistence less by half than what is found in health. The *mesenteric glands*, corresponding to ulcerated patches, were of a light grey color mixed with red ; of the size of a small nut, and very much softened. The lymphatic ganglions of the great curve of the stomach were also more or less red and voluminous, but not softened. *Liver*, natural ; bile of *gall-bladder*, pale and a little turbid. The *spleen*, of double its usual size, and moderately softened. *Kidneys*, a little engorged with blood. Mucous membrane of the *bladder*, healthy.

Not only was the submucous cellular tissue of the pharynx infiltrated with a concrete pus, forming a very thick layer, but the muscular coat of the part was not less thickened. This twofold lesion, which, without doubt, was in a great degree the cause of the death of the patient, was not announced before death by any symptom ; the patient had neither dysphagia, nor a return of liquids through the nose, as is observed in analogous cases, in which the patient has the full enjoyment of his cerebral functions. So that we must admit, that the inflammation of the submucous tissue, and the thickening of the muscles of the pharynx commenced after the delirium did, and that it arrived at the degree at which we found it, in a few days. Although this fact is worthy of attention, still, it has nothing in it, which varies from the general rules observed in the economy of the human body, for we see the muscular coat

of the small intestine become hypertrophied, in as short a space of time, when there is an obstacle which prevents the easy passage of fecal matter ; and, moreover, it tends to prove that hypertrophy of the muscular fibres is not a disease essentially chronic, as most authors seem to have thought.

In regard to the absence of symptoms marking this lesion of the pharynx, this fact is of importance, since this absence, as it can be attributed only to the cerebral symptoms, indicates how it happens that organs, deeply situated, give no signs of suffering in patients whose delirium has continued some time.

There is hardly any need of observing, after all that we have previously seen, that if the first symptoms of the disease showed a lesion of the intestine, the gravest, and, without doubt, the most ancient one, was that of the elliptical patches in the ileum,* and that there was an exact proportion between the two ; and, under this point of view, the affection did not differ in any thing from the cases of it we have previously studied.

Ulceration of the pharynx did not appear to take place in all cases indifferently. I did not find them in a single one of the individuals who died before the fifteenth day of the disease, and I have only one example among those who died after the thirtieth. (Obs. 15.) Therefore, it is very nearly exact to say, that I have observed ulcerations in those cases alone, in which the disease did not run through its course either too slowly or too rapidly. And, for this reason, as likewise on account of the small number of individuals who had them, ulcerations of the pharynx cannot be considered as essential to the disease, of which we are now treating, and forming one of its fundamental anatomical characteristics.

* In the original the word "jejunum," is used by mistake, I presume. — H. I. B.

II. IN PATIENTS WHO DIED FROM OTHER ACUTE DISEASES.

Out of seventy of those in whom the pharynx was examined with care, I found not a single example of ulceration of this part. If my observations be not sufficiently numerous to allow us to affirm that ulcerations of the pharynx take place in acute diseases only in those patients who die of the disease, with which we are now specially occupied, they render the circumstance very probable, and make these ulcerations a very important lesion, and, as we shall see hereafter, one of the *secondary* anatomical characteristics of the affection.

As to the other lesions of the pharynx, I found the submucous cellular tissue infiltrated with pus in a case of peripneumony, and its muscular coat thickened about the middle of the tube, in a patient who died in consequence of scarlatina. Except some ecchymoses, the muscular coat had no other lesion. I find in my notes of this last case no account either of infiltration of the submucous tissue corresponding to diseased part, or any alteration of the mucous membrane, and I fear I may have forgotten to examine with sufficient care, in reference to these points, for I have never since met hypertrophy of the muscles of the pharynx, except as a consequence of an inflammation of the mucous membrane, or of the submucous cellular tissue. However this may be, these two cases were the only ones in which there were any lesions of the pharynx, out of the seventy subjects, of whom we are now speaking.

ARTICLE II.

ŒSOPHAGUS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

Except two cases of hypertrophy of the muscular membrane, the œsophagus had no other lesion than ulceration. I observed this lesion in seven patients, that is to say, in very nearly the same proportion as ulceration of the pharynx; although the cases were not always the same in which both were affected. (Obs. 31, 32.)

When few in number, the ulcers were confined to the parts near the cardia, (Obs. 26, 31, 36, 41,) or the middle part of the tube. (Obs. 32.) When in greater numbers, they were seen through the whole length of the tube, or, at least, to within an inch or two inches from the bottom of the pharynx, and even under these circumstances, the ulcers were more numerous and larger near the cardia than any where else. (Obs. 42.) They were oval shaped, and directed vertically; their longer diameter varied from two to twelve lines. Most of them were superficial, but some were deep, so that the muscular coat was exposed, but it was not sensibly altered. (Obs. 36.)

Although there was no perfect relation existing between them and the mucous membrane of the stomach, it is proper to state that, in the majority of the cases where they existed, this membrane was very much altered in structure.

Moreover, as was remarked concerning the ulcerations of the pharynx, they were not found except in patients who died after sixteen days at least, of disease, and not at all in those who died between the eighth and fifteenth. Five of these

cases were in individuals, who died between the sixteenth and twenty-seventh day of the disease ; the two others, in patients who died after this epoch, that is to say, *ceteris paribus*, these ulcerations were very nearly as often found in those who died at one period, as in those who died during the other.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

Ulcerations of the *œsophagus*, like those of the *pharynx*, seem peculiar to patients dying of the affection which we are now examining ; at least, I have never found a single example of ulceration in patients, who died of other acute diseases. I have, it is true, found in one case, a very serious change of structure in the *œsophagus*, by which the mucous membrane had been destroyed, to a certain extent, the subjacent cellular tissue softened, atrophied, or nearly wholly destroyed, the lesion extending, nearly uninterruptedly, to the mucous membrane of the stomach. But, evidently, this lesion was not the same as that just mentioned, and the proposition I have laid down remains not less rigorously demonstrated to be true.

ARTICLE III.

STOMACH.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

Its *size* was generally the same as in health ; but rather often it appeared to me lessened in size somewhat. Three times, I found it one half as large again as it is in the great majority of cases (Obs. 14, 25, 45) ; and, in a fourth case, it was double the natural size. (Obs. 31.) Let it be understood, however, that in this account, I do not include those

patients who died of the perforation of the small intestine, for in them, the stomach was often considerably, though accidentally, augmented in volume.

The mucous membrane of the stomach was, in the greater proportion of cases, more or less seriously altered; sometimes softened and thinned, or even destroyed; at others, ulcerated, sometimes more or less softened, and with its color changed or not changed, and of its usual thickness; sometimes, mamelonnated. Though generally combined with one another, these lesions were at times found alone. Let us now examine each in succession.

SEC. 1. — Softening, with diminution of the usual thickness, and the destruction of the mucous membrane of the stomach.

The softening, with diminished thickness, of this membrane presented the two varieties which I have described in another work.* It was sometimes continuous without any interruption; at others, it appeared in the form of bands, which varied in breadth and number; the lesion occupied either the greater part of the surface of the stomach, (Obs. 10, 13, 28, 34,) or was confined to a part or the whole of its great cul-de-sac, (Obs. 6, 27, 36, 42,) or to a still smaller part of this organ, in the neighborhood of the pylorus.

In some cases, in which this double lesion took place in bands, the mucous membrane was destroyed to a considerable extent at times; and in one of them, at the same time that, towards the end of the band, the mucous membrane lost its extreme degree of softness, its white and bluish color was changed to a deep red tint, which would seem to prove that such had been

* Vide my Memoir upon this lesion, at the beginning of those I published, in one volume 8vo, 1826. — LOUIS.

its color at a less advanced period. (Obs. 36.) In another, where the destruction of the mucous membrane was more extensive, the cellular membrane, corresponding to it, was almost entirely destroyed, and the parietes of the stomach in that part retained scarcely any strength of texture. (Obs. 13.) Moreover, the mucous membrane, lying between these bands, was more or less changed in structure; sometimes it was red and very soft, and it usually regained its wonted thickness gradually in the surrounding parts; much more rarely, however, in an abrupt manner.

In nearly all the cases in which this affection existed in a continuous form, it was much less evident, at the first glance, than in others, for it did not have that white and bluish aspect, by which the bands were so easily seen. The mucous membrane was not completely destroyed in any point, and it had a yellowish, greyish or bistre color, as is seen in similar cases, in which the patient dies of chronic disease.

The softening, with diminished thickness, was observed in nine of forty-six patients, or in about one fifth part; in very nearly the same proportion in those who died between eighth and fifteenth days; between fifteenth and twentieth, and twentieth and thirtieth; it was little less frequent in those who died after this period. And if we divide these facts into two groups, so as to unite in one, all those who died between the eighth and twenty-fifth days of disease, and in the other, all who were carried off after the twenty-seventh, we shall have in the first, thirty, of which eight had softening with diminished thickness, and in the second, seventeen, and only one single example of this lesion among them. It moreover, in this case, was limited to the neighborhood of the pylorus, was less extensive and less severe than in the other patients. (Obs. 43.)

This fact is remarkable, inasmuch as it indicates that the length of duration of affections, called typhoid or ataxic fevers, is not the most favorable circumstance for the development of the alteration, of which we are now treating, and that this alteration contributes, probably, much to accelerate the fatal termination of the disease.

SEC. 2. — Ulceration of the mucous membrane of the stomach.

These ulcers, as they differed by their small size, their exact limitation, their sharply and perpendicularly cut edges, from the destruction of the mucous membrane, consequent upon the softening just described, were likewise not met with so frequently. I have seen them four times only, in patients who died on the fourteenth, twenty-fourth, and thirty-sixth days of disease. (Obs. 13, 33, 39, 44.) They varied in number to twenty and more; were situated upon the anterior face of the stomach in two individuals; near the pylorus and great curve of the stomach, in two others. The mucous membrane was mamelonated to a certain extent, near the part where they were situated, in one case, but there was no alteration of consistence or thickness in the others.

As I have already remarked, those ulcers were small, (two to three lines large,) generally incomplete, that is, the portion of mucous membrane, where they were found, was not entirely destroyed. Though generally of a rounded shape, they had in one case an elongated form similar to that of a button-hole whose edges have been separated by some body passed between them. (Obs. 23.)

They were, moreover, never the sole lesion of the mucous membrane, for this last was softened and diminished in thickness in two cases; it was merely softened in two others, to a greater or less extent.

SEC. 3. — Simple softening of the mucous membrane of the stomach.

This kind of softening was found in a great number of subjects, sometimes general, but usually it was confined to one region of the stomach, especially its great cul-de-sac, the part affected being sometimes red, at others not so.

The softening was general, and the membrane had lost one half or two thirds of its usual firmness, in four cases of patients who died between the twentieth and twenty-sixth days of the affection. (Obs. 3, 7, 19, 45.) Its color was orange or greyish, or was a mixture of red and grey in the same cases, and, with only one exception, it was more or less largely mamelonated.

The softening was limited to the great cul-de-sac, of which it occupied the whole or a part, in ten subjects, all of whom had it to a small degree only. A more or less vivid red color, either continuous or dispersed in somewhat irregular diamond shaped spots, was connected with the affection in one half of the cases. The mucous membrane, moreover, in three cases, presented a well marked mamelonated aspect over a greater or less extent.

SEC. 4. — The mamelonated state of the mucous membrane of the stomach.

This state of the mucous membrane existed in thirteen individuals, or about two sevenths of them, and it occupied nearly the whole surface of the stomach, save the great cul-de-sac, in nine cases. It was limited in others to the neighborhood of the cardia, or its great curvature. Though sometimes simple, (Obs. 1, 7, 16, 20,) it was generally complicated with some other lesion, either simple softening of the mucous membrane of the great cul-de-sac, or with softening and diminution of

thickness of the same organ, (Obs. 28, 36), or with some ulceration.*

But whether this mamelonated state of the stomach was simple or complicated, that portion of the mucous membrane which was the seat of it did not have its natural color; but sometimes it had a slightly red tint; sometimes a clear orange color, but generally it was greyish or bluish, and this last color was more common in patients who died after the twentieth day, than among those to whom the disease proved fatal before that period. The consistence of the membrane was also somewhat diminished, in several cases, and three times I saw it manifestly thickened.

Moreover, the mamelonated state was much more frequent among those who died between the eighth and twentieth days of disease, than among those who died at a later period. The former, seventeen in number, had among them seven examples of this lesion, and the latter, thirty in number, had six only. Let us group them together somewhat differently; if we place in one group, for example, all those who died before the twenty-seventh day, (thirty-one) and in the other, those who died later, (sixteen) the difference becomes much more considerable. We find twelve stomachs mamelonated in the former, one only in the latter. So that, as I have already said, if the mamelonated state of the stomach frequently proceeds very slowly, it may, however, have a more or less acute course. It would be difficult, in fact, to admit that the mamelonated state in the cases of which we are now treating could have commenced before the typhoid affection, the patients, in whom it was found, having appeared to be enjoying per-

* In order to obtain more ample details upon this lesion, see appendix to my Memoir upon the softening, with diminution of thickness of the mucous membrane of the stomach. — LOUIS.

fect health, at the time they were taken with this last affection.

The softening and the more or less marked red color which, as we have seen, the mameloned portion of the mucous membrane presents, seem to be in favor of this opinion, these attributes being those of acute inflammation. And with respect to the cases in which the mameloned state was connected with a greyish or bluish color, which varied in intensity, the mucous membrane preserving its usual firmness, they are not as valid an objection to what has just been said, as one would have been led to anticipate, since the red color of the acute period of the inflammation of the elliptical patches of the ileum passes, with some rapidity, as we have shown in the first part of this work, to the greyish blue color ; also, at the beginning of this retrograde course, the patches present the appearance of a mingling of grey and of red, which produced the color of the mucous membrane of the stomach, in our present cases. And what makes this interpretation of the facts quite natural is this, viz. the grey color, according to what we have just said, was more frequently found in patients dying after, than before the twentieth day ; very nearly as it takes place in the elliptical patches of the ileum ; and, as we should have anticipated, the traces of the retrograde course of the lesions appeared most frequently, and most marked, when in persons who had died at a period, farthest removed from the commencement of the disease.

In whatsoever manner we consider this mameloned state of the stomach, it is certain that it is a lesion, and like all the morbid changes, observed in this mucous membrane, it is more frequent and more severe according as the course of the disease has been more rapid.

Finally, the mucous membrane of the stomach had in thirteen

patients, or a little less than a third of the cases had the consistence, thickness and velvet-like softness that are natural to it ; it was consequently perfectly *healthy*, save a slightly rosy tint found in some individuals, but this rarely extended over the whole extent of the stomach, and it may be considered as the effect of simple congestion alone.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

1st. Out of seventy-two patients in whom the mucous membrane of the stomach was observed with care, twelve, or a sixth part, had it *softened* and *thinner* than natural, in either one or the other modes which have been indicated. One died of peritonitis, the others of pneumonia, dysentery, arachnitis, acute softening of the brain, phlegmonous erysipelas of the limbs. The last died under entirely unexpected circumstances, in consequence of a slight, feebly marked eruption. The greater part were older than those who died of typhus fever, but in the greater number, two thirds, the affection had had a rapid march, and death arrived between the sixteenth and twentieth days, counting from the origin of the affection. It took place between the twenty-eighth and sixty-ninth day, in other patients.

2d. *Ulcerations* were found in three individuals, or in a twenty-fourth part of the cases.

3d. *Simple softening* of the mucous membrane was found in eighteen ; eight times throughout the whole extent, or nearly the whole extent of the stomach ; ten times it was limited to the great cul-de-sac. It was considerable in five of the former cases, and in six of the latter ; but it was moderate in the others. Whether universal or limited to the great cul-de-sac, the mucous membrane which was the seat of it was more or less red in eleven patients, and like that which was con-

nected with a diminution of the thickness, it was met oftener in persons who died rapidly after the attack began, than in those in whom the disease ran a slower course. Traces of it were found in persons who died of pneumonia, after having been ill four or five days only.

4th. The *mamelonated state* was found in twenty-eight patients, or about four tenths of the whole, and, in sixteen of these, throughout the largest part of the extent of the mucous membrane, ordinarily to a remarkable degree, much greater than in the typhoid affection. As in this last disease, the color of the mamelonated portion was more or less seriously altered, from its natural state, so that it did not have its usual whiteness, save in one of the twenty-three cases where it was described. It was of a rose or red color in seven, which, with one single exception, were patients who died rather rapidly, or between the sixth and twenty-ninth days of the disease ; it was greyish or bluish in the rest. Moreover, the mamelonated state was simple, and formed the sole affection of the mucous membrane in thirteen cases only. It was connected with the softening and diminished thickness of the membrane in six cases, and in many others, with simple softening of the membrane lining the great cul-de-sac. The mamelonated part was itself softened in five patients.

I thought at first I could attribute the different proportion of cases, in which I met this lesion as a consequence of typhoid affections and of other acute affections, to the difference of the age of patients, those dying of the latter being generally advanced in years.* But I gave up this explanation when I found, upon the examination of my tables in a more detailed manner, that the mamelonated state is proportionably as com-

* The mean age of these persons was forty-six years. — LOUIS.

mon among individuals who were not above twenty-five years of age, as among those who were much older. There is one other circumstance which it is proper we should not forget, to wit, that in these other diseases as well as in the typhoid affection, the mamelonated state was a little more frequent in patients who died early, than in those in whom the disease continued longer before death occurred.

Finally, I found the mucous membrane of the stomach perfectly *well*, save a slight alteration of color in certain cases, ordinarily limited to the great cul-de-sac, in fifteen individuals, or in about a fifth part of the cases examined.

In *conclusion*, we find that not only the same changes were observed in the mucous membrane of the stomach in persons who died of the disease which we are now examining, as in those who died of other acute diseases, but also the proportion of cases, in which these lesions were found, was very nearly equal in both classes.

For instance, softening, with diminution in thickness, was found in a fifth part of the cases of typhus, in a sixth part of those of other equally acute diseases.

Ulcers, in the twelfth part of the former, the twenty-fourth part of the latter.

Simple softening in a little less than a third part of the cases of the typhoid affection, and a quarter of those of other diseases.

The mamelonated state, was very nearly in the same proportions, but inversely as the last.

Finally, the mucous membrane of the stomach was perfectly healthy in two sevenths of the patients who died of typhus and in about one fifth of those who died of other acute diseases.

Since the mucous membrane of the stomach is not altered in all the cases of this affection, since it is found in a normal

state in patients who die very quickly, and in whom we cannot admit that the disease, had it existed, could have disappeared completely, since also, in cases where one of those lesions exists, it commences, as I have shown in the earlier part of this volume, at a somewhat distant period from the origin of the typhus affection, it follows certainly that the typhus, ataxic, or putrid fever is no more a gastro-enterite than a pneumonia is a gastro-pneumonia, although we find the mucous membrane of the stomach changed, in a more or less important manner, in a great number of patients who die of inflammation of the pulmonary tissue. So that all that we can deduce from the facts I have given, and this conclusion is very important, is this, to wit; in every case in which an acute affection of any nature gives rise to a febrile excitement lasting some time, the mucous membrane of the stomach becomes, at a period which varies according to the nature of the disease, the seat of a lesion, which lesion becomes more or less important according to the predisposition of the patient, and it accelerates at times the time of death, and is, in fact, in certain cases, the sole cause of death.

If, moreover, I have abstained from analyzing the nature of the different lesions which have just been described, it is because they presented nothing very remarkable about them of which I have not spoken in another work.* I would remark, however, in relation to the softening with diminution in thickness of the mucous membrane of the stomach, that all the doubts I had at that time, at which I devoted myself particularly to this subject, have but continued to increase, and it

* See, in my researches upon Phthisis, the chapter relative to the mucous membrane of the stomach. — LOUIS.

seems extremely probable to my mind that, in a certain number of cases, the lesion is not the result of inflammation, because we find no evident traces of inflammation about the part thus softened, atrophied and pale, and moreover the sub-mucous cellular tissue partakes of the same alteration, is softened and is thinner than natural, and is not inflamed in any part. All this is entirely the reverse of what happens in violent inflammation of the mucous membrane of the colon, which we cannot suppose would be the case were the lesion of an inflammatory character. The facts I shall give relative to the mucous membrane of both intestines will support these reflections.

ARTICLE IV.

DUODENUM.

It was less frequently diseased, and less severely affected than any part of the alimentary canal.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The mucous membrane was healthy in eight out of twenty-two patients, in whom I described it with care ;* rose colored, or red in four, either continuously over some space or in spots ; greyish in two others, in which the patient died at an advanced period ; softened in different degrees in three cases in which it was red. The small glands were remarkably enlarged in the portion next the pylorus, in the same number of individuals, of whom two had also the softening above-mentioned. Finally, there were, in two cases, one or two small superficial ulcers,

* I examined the duodenum of every individual, but not having taken notes of the result of my examination save in twenty-two cases, my analysis must of course be limited to that number. — LOUIS.

from one to two lines in diameter, quite near or at a short distance from the pyloric valve.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The mucous membrane of the duodenum was healthy in a little less than a third part of these patients. It was of a rose or red color, and this hue was either uniform or in spots, in nine of thirty-six cases, in which I have made special mention of its color in my notes ; it was greyish and reddish in a ninth part of the individuals, and softened in three. Its isolated glands were somewhat augmented in volume, yellowish or whitish in six. Not one had the slightest ulceration.

Except in this last lesion, the mucous membrane of the duodenum did not present any very appreciable difference in those patients who died of typhus, or of any other acute affection. But this exception is remarkable, inasmuch as it shows, with the facts already given to the reader, that there is a great disposition for ulceration in the course of the disease of which we are now speaking.

ARTICLE V.

SMALL INTESTINE.

Volume ; nature of the contents ; color, consistence, thickness of the mucous membrane ; changes in the elliptical patches, (Peyer's agglomerated glands) ; solitary crypts or glands.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

SEC. 1. — Volume of the Intestine.

It had nothing remarkable about it, so that I found it a little enlarged, in fourteen patients only out of thirty-nine, in whom I

examined it, among whom I do not count those who died of perforation of the ileum. It was of considerable size in the two individuals, who died on twenty-eighth and twenty-ninth days of the disease. (Obs. 29, 33.)

The more or less rapid course of the disease seems to have had some influence upon the proportion of cases in which this slight degree of meteorism was observed; at least, I found it in half of the patients who died in the first, second and fourth periods, and in a sixth only in those of the third period.

These facts show that meteorism of the small intestine does not depend upon the ulcers, these being few in number, superficial and small in extent in the patients, who died between the eighth and fifteenth days of the disease, and in whom the proportion of cases of meteorism is greater than among those who died between the twentieth and thirtieth, in whom the ulcerations presented themselves under entirely different circumstances. That which we shall say hereafter, in regard to the large intestine, will confirm this view of the subject, and we shall likewise see that if the meteorism of the small intestine be not frequent and but little marked after death, we cannot possibly believe in its having disappeared before the disease proved fatal.

SEC. 2. — Intussusception of the Intestine.

I have met with intussusception from the upper to the lower extremity of the small intestine in three cases, and, as is usually the case, without observing the symptoms which could be referred to it. Two of these patients died on the eighth day of the disease, (Obs. 11, 13,) the other on the twenty-sixth. (Obs. 6.) What conclusion can we draw from so small a number of facts?

SEC. 3. — Contents of the Intestine.

Twice only I noticed the presence of a number of lumbrici in the small intestine, in patients who died between the eleventh and twenty-third days of the disease. But I am very sure that I have not mentioned always in my notes their presence, even when I knew of it, so that this number is far from expressing that of the cases in which they were really present, and, for a much stronger reason, is far from presenting a just estimate of all the facts connected with the presence of worms ; many persons, in whom I found no worms after death, having passed a greater or less number during life.

Except one case of perforation, in which there were scarcely any traces of mucus in the intestine, all the subjects contained a greater or less quantity of it. It was particularly abundant near the duodenum in half of the patients, who died between the eighth and fifteenth days of disease, and in a fourth part of those who died after this epoch. This difference can hardly be accounted for by the state of the mucous membrane.

The bile was generally abundant and very liquid, whatever was its color. This color was generally ruddy or a clear yellow. The orange hue was found more frequently in patients who died rapidly, or before the twentieth day of disease, than in those who died at a later period, not through the whole length of the canal, but most commonly where the mucous membrane was more or less red. This circumstance seems to show that this color was caused by an exhalation of a certain quantity of blood, and the facts which follow tend to the support of this opinion. A subject, who died on the eleventh day of disease, and in whom the mucous membrane of the ileum was red, contained in this part a liquid of the same color, which was somewhat copious and very viscid. (Obs. 9.) In two others, who died on fourteenth and twenty-second days of the disease, this

same portion of intestine contained a somewhat thick, black, brownish or dark yellowish brown liquid, and this part was the only one in which the mucous membrane was altered. (Obs. 24, 36.) In a fourth, who died on twentieth day, there was found a substance of at least as dark a color, and certainly thicker in consistence. It extended through the whole length of the canal, the mucous membrane of which was more or less red, and presented here and there black spots, together with considerable softening, which varied in degree in different parts. In these remarks we have left out of the question the elliptical patches of the ileum.

It is, moreover, remarkable, that these cases, and the only ones of the kind which I have ever seen, were those of individuals in whom the disease had had a rapid course.

SEC. 4. — Color of the Mucous Membrane.

This color had many varieties, which it will be well to examine with care.

It was either *white* or very nearly so throughout the whole length of the intestine in twelve cases,* of which there were

4 out of 10 in the first series,

3 “ 7 “ second “

5 “ 20 “ third “

1 “ 9 “ fourth “

* There is a typographical error here which I find it impossible to correct, though I have examined all the observations given by the author in the two volumes. The mistake is this, Louis says that in *twelve* the mucous membrane was white, or nearly so, throughout the whole length of the intestinal canal, but if we examine the details of the table we find that *thirteen* cases are given in it. It is of but little importance which of the two may be correct, but we may learn something from our difficulty in deciding this question, viz. indefiniteness of expression is always a source of error, and had Louis, in the present instance, omitted the expression *very nearly* we should probably be able now to decide the point in debate. — H. I. B.

That is to say, that the proportion of cases in which the intestine retained its usual healthy whiteness was greater, according as the disease proved more quickly fatal.

It was exactly the reverse of this with the *grey* color, for in two who died before the twentieth day, I found only the slightest traces of it ; but I observed it through nearly the whole track of the intestine in seven of those who died between the twentieth and thirtieth days, generally after the twenty-seventh, (Obs. 2, 19, 25, 33, 35, 39), and in four individuals who died at later period. (Obs. 15, 16, 17, 30.)

The *red* color was found in a still greater proportion of cases than the preceding, to wit, in a third part. It existed very nearly in the same proportion in each one of the groups into which I have divided my observations ; six times, throughout the whole or nearly the whole track of the intestine, (Obs. 3, 11, 14, 42, 44 ;) ten times, in half or a third of the canal, and almost always, in that case, in the portion of it nearest the cæcum.

Finally, the *yellow* color which I could connect with the white, inasmuch as it seems to be merely this masked by the bile, was found in four cases only, viz. in one of the patients of the first series throughout nearly the whole length of the canal, (Obs. 38) ; in one of the second, in some points only, (Obs. 27) ; in two of the third, (Obs. 22, 37.)

It is worthy of remark that the *grey* color is very nearly the sole one I have met with in a certain class of patients, namely, in that in which the patients died at a period somewhat remote from the epoch at which the disease began. Therefore, if we consider this fact as an expression of a general law, it follows that the *grey* color is found as a consequence of affections like those we are now examining, only in patients who have died twenty days at least, and generally many more

days after the commencement of the disease. This, it seems to me, could not be the fact, except for one of two reasons, viz. either this color, independently of any other, does not make its appearance until this period, or it is merely a change of the red color which has existed previously. This last hypothesis will appear the more probable, if we recollect that a change takes place at the same period in the mesenteric glands, elliptical patches of the ileum, and even, though in a less marked manner, in the mucous membrane of the stomach in cases in which it is mamelonated, and in some others also.

SEC. 5. — Consistence of the Mucous Membrane.

This consistence, with the exception of the membrane over the elliptical patches, and of which we shall soon speak, was natural, or very nearly so, in nine cases out of forty-two in which I examined it, to wit ;

In 2 out of 9 of the first series,
2 " 7 " second "
2 " 18 " third "
3 " 9 " fourth "

Thus we see the mucous membrane of the small intestine had oftener its natural, healthy consistence in patients in whom the disease had continued long, than in those who died soon, especially those to whom the disease proved fatal between the twentieth and thirtieth days.

It was more or less softened in the other cases ; thirteen times through the whole track of the intestine, twenty times through three quarters, the last half, the last quarter, or the last three or four feet of the canal.

This softening took place in the four groups of patients in the following manner.

1st. It was universal in two of the individuals who died between the eighth and fifteenth days of the disease, and to a very small degree in one of them, (Obs. 10) ; nearly universal in three others, (Obs. 9, 11, 13), and to so great a degree in one, that the membrane had only the consistence of mucus ; limited to two or three feet next the cæcum, in the two last.

2d. It was universal, and to an important degree in two patients who died in the following period. (Obs. 30, 36.) It occupied the half or the last third of the canal in three others, and in one of them the mucous membrane had not the least consistence.

3d. It was general in eight patients who died between the twentieth and thirtieth days of the affection, and to a moderate degree in three cases ; it was limited to the last third or three or four last feet in eight others, in some of whom the softening was found in its greatest degree.

4th. Finally, it was universal in one of the patients of the last group ; limited to the last third of the intestine in two others, (Obs. 15, 30) ; to the three feet nearest the cæcum, in the two last. (Obs. 14, 16.)

This softening being a secondary lesion, it would be natural to suppose, that if it is less frequent in patients who die after the thirtieth day of disease than in those who die earlier, it is perhaps because the affection has made a retrograde course, and this hypothesis is confirmed by the fact, that the grey color (which is probably merely the red color altered) is more frequent in these same patients than in the others. But more than one plausible objection may be made to this view of the subject, therefore we shall examine it hereafter.

I have said that the softening of the mucous membrane of the small intestine is secondary or accessory, and this follows

incontestably from the fact, that in many persons who died between the eighth and fifteenth days of the affection, and in whom we cannot admit that the lesion could have disappeared entirely, the mucous membrane was entirely healthy as it regards its consistence.

But what was the nature of this softening? We can solve this question only by comparing together the thickness, the consistence, and the color of the mucous membrane, about which we are now treating. Let us now examine the elements of this question thus brought into comparison with each other.

In eight of the twelve cases in which the softening existed to a greater or less degree through the whole track of the intestine, the mucous membrane was pale or greyish; it was more or less red in the others, at the end or in the latter half, or through the whole extent of the ileum, and the softening was not greater in the latter cases than in the former. There was manifest thickening in two cases only, in which the mucous membrane was white, or had merely some pale red spots in some points. What deduction shall we make from these facts? Must we admit that the white and red softening have each their own causes, the one wholly different from the other? that one is of an inflammatory and the other of a different nature? This question, which I stated in another work,* without being able to decide it, seems to me may now be decided affirmatively, at least, in certain cases. For if it is true that softening is the ordinary effect of acute inflammation, and that, when we find redness, thickening and softening combined, inflammation is certain to have existed, and that when the softening exists without thickening, this is still probable; it is

* See my "Researches upon Phthisis," page 99. — LOUIS.

not, by any means, probable when the softening is found under different circumstances, that is to say, without redness and without thickening. Any other view of the subject appears to me incorrect, until it be proved that nature has only one mode of producing the softening of which we are speaking, and the contrary seems to me positively established with regard to the softening with diminished thickness of the mucous membrane of the stomach, and of the corresponding cellular tissue, as we have stated previously, and, as we shall see shortly, this is the case in other organs, in many cases. I am far from admitting, therefore, that the softening of the mucous membrane of the small intestine is always inflammatory, on the contrary, it seems to me necessary to admit that it is of an entirely different character in certain persons.

It will be objected to this mode of viewing the subject, that in certain cases, in which the mucous membrane of the jejunum was softened without redness or thickening, and the elliptical patches of this part of the intestine were moreover healthy, still the lymphatic glands, corresponding to them, were more or less red and enlarged, which would seem to indicate an inflammation of the mucous membrane. And to this I will answer that the same state of the glands has been observed in cases in which this membrane was perfectly healthy, as we shall see in detail hereafter, so that this objection is without importance.

We have seen in the first part of this work with regard to the elliptical patches, that, whenever they are softened and thickened, they are red, and whenever they are softened and red, they are thickened, and this is a new reason why we should believe that the general attributes of inflammation are not so easily found in an isolated state, as some may think, and that one of these attributes, the redness, thickening or the softening

is not, when alone, sufficient to prove that inflammation has existed in the organ examined.

Nevertheless, I am far from pretending that we must allow those organs only to have been inflamed, which we find at the same time reddened, thickened and softened, or merely softened and reddened ; the history of the serous membranes is proof to the contrary. Neither can we doubt that some mucous membranes, those of the trachea and larynx, for example, are sometimes inflamed, without being sensibly thickened and softened. As much may be said of the bladder, and in one of the patients, whose history I have previously given, the mucous membrane of the gall-bladder was evidently inflamed, because it had secreted a certain quantity of pus, without, however, being manifestly thickened or softened. (Obs. 1.) But this is by no means the case always, and, to return to our subject, when we find a partial but well marked inflammation of the mucous membrane of the small intestine, over the solitary crypts or glands, for example, we find this membrane, at the same time, thickened and softened to a certain degree. All this proves that our present question is not so easy to decide as one would anticipate, and that the history of the softening of mucous membranes is far from being complete.

SEC. 6. — Elliptical patches of the Ileum, or Peyer's agglomerated Glands.

The elliptical patches of the ileum were more or less seriously changed in structure in all the patients, in the last two or eight feet of the canal. They were so throughout the whole length of it in one case only. This alteration was found under two forms, which were very distinct, and generally recognised with great facility at the first glance. Let us examine them successively.

FIRST KIND OF MORBID CHANGE IN THE ELLIPTICAL PATCHES.

This was found in the same patients in very different degrees, in different parts, being most severe in those patches which were nearest the cæcum, and the least so, in those farthest from the large intestine.

In the intervals between these diseased patches were scarcely ever found any in a perfectly healthy state, which seems to indicate, as I have remarked previously, that their alterations went on in a gradual manner from the cæcum to the duodenum, and did not commence simultaneously in all the places between these two spots.

The change from healthy patches to those which were altered in structure took place sometimes in a gradual manner, but generally it was the reverse ; and either all or nearly all the different degrees of the lesion were found in some patients. In passing from the patches which were the least altered, to those which were the most so, or towards the cæcum, the following appearances presented themselves.

The first were but very slightly elevated, and had a pale or faint rose color. The greyish points which are seen in the natural state of the patches, in nearly every patient, and which indicate the orifices of little glands or crypts, had disappeared, and the softening of the mucous membrane was very slight. After these patches, came others in which the thickening, softening and redness were progressively more marked. The first of them had in some cases a surface which was granulated, as it were, or very minutely mamelonated, upon which were seen a greater or smaller number of open orifices, which occupied the parts in which the above-mentioned grey points are usually found, and they were, in fact, nothing else than the orifices of the crypts. So that in this state of the alteration

the most remarkable effect of the lesion was the development and, if we may so express it, the exaggeration of the natural structure of the parts. (Obs. 1, 10, 13, 21.) Although simple inspection made this evident, we obtained a new proof of it by raising the patch itself, or rather the mucous membrane that aided in its formation, for then we saw that the elevations observed before this membrane was raised, were more or less marked upon that face of it which adhered to the subjacent parts; and, by putting the patch between the eye and the light, we saw alternately, opaque and semi-transparent points, and these last indicated the intervals between the crypts. The submucous cellular tissue was more or less thickened, of a pale rose color, analogous to that of the mucous membrane. Hence it results that the elevation formed by the patches in this first degree of alteration was caused by a thickening of the mucous membrane and of the subjacent cellular tissue.

After these patches came others which were redder, thicker, larger and softer; they had a uniform appearance, were not mamelonated, had no open orifices, and the small glands, composing the patches, were no longer to be seen. They could not be raised as those previously spoken of, and the submucous tissue was likewise redder and thicker under them, than under those in which the mucous membrane was less altered.

Finally, at a greater or less distance from the cæcum, the patches had ulcerations upon them, some superficial or just commencing, with an imperfect destruction of the mucous membrane; others deeper, with entire destruction of this membrane. Sometimes they were distinct from one another, at others, there were many collected on the same patch, so that the entire destruction of the mucous membrane over the whole extent of the patch was owing, at times, to the union of many small

ulcerations, at others, to the gradual increase in size of one and the same ulcer.

The submucous cellular tissue, which composed the surface of the ulcerations, was in many of them very nearly in the same state as in the patches which were not ulcerated, and it had not lost any of its substance, whilst, in those nearer the cæcum, it was destroyed to a depth and extent which varied on the different patches, and the muscular coat, when exposed, was more or less red and thickened, its fibres being very distinct. In some cases they were to a certain extent destroyed, and the peritoneum being ruptured, a perforation of the canal was the consequence, this perforation being generally single, but there were sometimes two of them in the same patient. Eight out of the forty-six individual cases, the lesions of which I am now analyzing, presented this affection.

Moreover, every degree of the alteration took place very rapidly in some cases, so that the perforation, which was the last period of it, occurred in one patient who died on the fourteenth day of the disease, and forty hours after the symptoms, to which it gave rise, commenced. At a future period, I shall speak again of these perforations ; at present, it is sufficient to remark that they always occurred very near the cæcum, in the last ten feet of the ileum, which is a consequence of the fact I have mentioned before, to wit, that the changes wrought in the patches were always greater according to their proximity to the ileo-cæcal valve.

Besides their depth and extent which, as we have seen, were extremely various, the ulcerations differed from one another very much. The circumference was generally regular, oval or rounded, but sometimes it was angular or dentated (*dentelé*), as it were, in some cases. Some, instead of having perpendicular edges, had them slanting gradually towards

the adjacent parts, so that the destruction of the mucous membrane was to a much greater extent than that of the cellular tissue, which, in its turn, was more widely destroyed than the muscular coat. In some patients, likewise, the edges, instead of being well marked, had several strips of membrane attached to them which were more or less separated from the subjacent parts. (Obs. 1, 13, 31, 44.)

It was especially among the patients who died between the fifteenth and thirtieth days that this alteration, of which we are now speaking, presented all the varieties which we have mentioned. But such was not the fact in those who died before the fifteenth, or after the thirtieth day. In the former, the ulcerations were generally small in size and depth, and few in number, or there were none at all to be seen, (as in two cases,) and the elliptical patches were merely more or less red, softened and thickened in a part of the ileum. A single case of this kind was observed in a patient who died at a later period on the twenty-second day of the disease, (Obs. 22), but this is the only one which I observed among individuals, in whom the progress of the disease had not been very rapid.

Among those who died after the thirtieth day, the elliptical patches, whether ulcerated or not, presented the following modifications.

Their color, which had been, as already mentioned, of a red hue, which varied in intensity, was changed to a mixture of red, of grey and of blue in various proportions, or they had a greyish or bluish appearance without any red tint, and they were not so thick, and were of a more consistent texture than the red patches were, so that the less they had of a red color the less thick and soft they were.

These different shades of color from the red to the grey, these different degrees of softening, of thickening, in the man-

ner and according to the law of progression already stated, in cases where death took place long after the commencement of the disease, seem to me to demonstrate that these patches in which they were found had had, at a certain period of the disease, all the characters belonging to the red patches, and the differences, observed between them and these latter ones, were the consequences of a retrograde course nature had commenced for the ultimate restoration of these patches to a healthy state. Of this we must have been convinced in the first part of this work.

The submucous tissue presented the same alterations of color, consistence and thickness, whether the patches were ulcerated or not. Those which were ulcerated had not in some of the cases any other thing remarkable about them ; in others, the edges were, in certain parts, or throughout, more or less depressed, and in some the surface of the ulceration was more or less depressed, had a polished, brilliant aspect, and was covered with a very thin pellicle, which was transparent like a serous membrane, and continuous with the submucous tissue around the ulceration. It was a true cicatrice, and marked a retrograde course in the disease, and that nature had been striving some time to restore the diseased parts to health. I have found no example of this, except in cases which have proved fatal a distant period from the time at which the disease commenced ; that is to say, after thirty-six, forty and forty-three days of disease. (Obs. 15, 16, 17.)

Moreover, the ulcers which were cicatrized, or only in the process of cicatrization, presented in some cases the same peculiarities which are seen in ulcerations of the skin, which are undergoing the same process. Whilst the cicatrice commenced only on one side, it seemed to have no influence upon

the other, the mucous and submucous tissue being separated from the subjacent parts in a portion of the circumference of the ulcer. (Obs. 36.) I found, in one case, in the middle of a cicatrice already far advanced, the remains of mucous membrane, which indicated that upon the patch where they were seen, as upon many others not cicatrized, many ulcerations commenced at the same time.

Finally, in cases in which there were perfect or commencing cicatrices, all the ulcerations did not have them; this restoring process of nature was found only in the neighborhood of the cæcum, so that as I have said above, nature followed always the same course in the production, and in the cure of the disease.

The small patches, which naturally exist in the intervals between the elliptical patches of the ileum, were sometimes affected like the other larger ones, and to the same degree. It was very nearly the same case with those which are immediately in the neighborhood of the ilio-cæcal valve, and occupy, for the space of an inch and a half or two inches and a half, the whole, or nearly the whole circumference of the canal. They were more or less red or bluish, softened, thickened, ulcerated or much more perfectly confluent than when in a healthy state; but they were generally less severely diseased than the last elliptical patches of the ileum. I have likewise never seen but one case of perforation of this spot which they occupy.

SECOND KIND OF MORBID CHANGE IN THE ELLIPTICAL PATCHES.

The only difference between this alteration and the one just described consisted in the peculiar disease of the submucous tissue; therefore we shall speak merely of this tissue.

Instead of being somewhat reddened, thickened and moist

without other change of structure, instead of partaking in some measure of the inflammation of the mucous membrane which covered it, as in the preceding variety, this cellular tissue was transformed, either through the whole extent, or nearly the whole extent of the patches, into a homogeneous substance, which had no apparent organization, and was of a more or less pale rose or yellowish color ; it presented a dry, shining appearance where it was cut ; it was either friable, or had some consistence, and was from two to three lines thick.

It was very easy to be seen that this substance had not been secreted upon the surface of the submucous tissue, but into its substance, by making an incision perpendicularly through the patch under which it was, for we were thus able to see this tissue divided into two parts, and its laminae, which were easily recognised for the space of about two lines, separated from one another.

Whilst the patches remained not ulcerated, and whilst the mucous membrane covering them was simply more or less reddened, thickened and softened, they presented a smooth, uniform appearance ; the substance, which distinguished them from those described formerly, was tolerably consistent at its upper surface, and became more so when nearer the muscular coat, and at a short distance from this last might have been compared for firmness of texture to healthy lymphatic glands. But when once ulcerated, these patches had a very uneven aspect, were more or less deeply furrowed, ordinarily in the direction of their smallest diameter, they were easily recognised at the first glance, by reason of their uneven surfaces, and the yellow color which they took from the bile. The material of which they were composed was very friable at their surfaces, but was of a good consistence near the muscular coat.

Moreover, this friability was not confined to the ulcerated parts, but it was found in some patients in whom the material had not been exposed. In these cases, we were able to separate without effort the substance, which we are now speaking of, from the parts with which it was connected. In some cases this separation had taken place spontaneously, and the part separated and inodorous was but very slightly attached to the circumference of the ulcer.

There was no liquid connected with this substance in the parts which were not exposed and where it yet was friable, so that we cannot compare its mode of separation with that of tuberculous matter, to which its color, and in many cases its rapid organization, will not, moreover, allow us to compare it. It cannot, moreover, be compared to gangrenous eschars, which it resembles in no respect. Hence we see that, if we know some of the principal circumstances attending its development and its destruction, we are perfectly ignorant of its nature.

Though generally entirely limited to the space occupied by the patch, it nevertheless sent, in some cases, minute elongations to the length of two or three lines beyond, into the surrounding parts.

It was seen also in the substance of some of the small irregular patches existing in the intervals between the elliptical patches, and in some cases it was observed in the form of little knobs or pimples, (*boutons*) from two to three lines in diameter, and as many high.

This form of disease in the patches existed in somewhat less than a third part of the patients, or in thirteen of the forty-six which we are now studying; it was connected with the first in three cases, (Obs. 5, 18, 24); it was without this same

complication in the others, (Obs. 4, 6, 7, 8, 9, 10, 23, 32, 38, 45), and it did not occupy a less extent of the canal than the former. In fact, it is worthy of remark that the only case in which there was an alteration in all the patches, through the whole track of the intestine, belongs to the form of disease which we are now studying. (Obs. 4.) We can call this form *hard*, in opposition to the former, which we can call *soft*, and hereafter I shall designate the two forms of disease, by the terms hard and soft patches.

A fact worthy of notice is this, that the hard patches were much more frequently found, *ceteris paribus*, in patients who died between the eighth and fifteenth days, than in those who died afterwards. The cases in which I observed them were as follows,

6 out of 10 patients of the first series,					
2	"	7	"	"	second "
5	"	20	"	"	third "

Do these proportions depend upon any law, or must we suppose them to be dependent upon chance? The former supposition seems to me to be the most probable, because the proportion of cases diminishes from the first to the second group, from that to the third, and because I have never observed a single case of hard patches in patients who died after the third period* of disease. Is there more danger connected with these hard patches than with the soft ones?

If the diseased patches presented remarkable differences as to the lesions of the cellular membrane, they resembled one

* In the original, the word *day* (jour) is introduced, evidently by mistake, therefore I have taken the liberty of correcting the error, for it is evident Louis intended to state the fact as I have given it in the text. — H. I. B.

another in the circumstance that there always was some lesion of this tissue when the patches were diseased, no matter what was the peculiar nature of the change of structure that the patches had undergone, whether the patients died early or after a long period of disease, whether the mucous membrane of the patches was very red, much softened and thickened, or whether these lesions were slightly marked, whether the crypts or small glands, by the union of which the patch is chiefly formed, were distinguishable or not. Therefore, it is impossible to decide whether one of these lesions was primitive or consecutive, and having met them always united, we are induced to believe that they commenced simultaneously. This conclusion is very nearly rigorous, and is the only one not in opposition to the actual facts, and it strengthens the idea of the specific character of the disease, since in the greater number of cases in which the mucous membranes are inflamed, the submucous cellular tissue does not partake of the inflammation.

I could draw from the state of the hard patches a still more unexpected conclusion. For, upon many of them the mucous membrane, although softened, was not so to an extreme degree, and the hard material underneath was not, however, less thick. Far from concluding that this latter lesion is a consequence of the former, which would be to admit an effect disproportionate to the cause, one would deduce a much more rigorous conclusion, by admitting that in a certain number of persons attacked with typhoid fever, the disease of the cellular texture of the patches commences before that of the mucous membrane which corresponds to it. But we must not forget that now we are dealing with probabilities only.

However, whether the patches were hard or soft, the number of those diseased more or less severely was generally con-

siderable, from twelve to forty in two thirds of the cases, and in those in which they were the largest and nearest to one another, they occupied, when united to the solitary crypts or glands and the small patches, the greater part of the last two feet of the intestine.

Another circumstance worthy of notice is this, to wit, when death took place soon after the commencement of the disease, the number of patches more or less seriously changed in structure was considerable, and greater generally than under opposite circumstances.

SEC. 7. — Solitary Crypts, or Brunner's Glands.

These crypts, which in their natural state cannot be seen, were found between the patches more or less seriously diseased, in twelve cases, through a space of two or three feet, rarely greater; they were always near the cæcum, and very nearly with one single exception, were always larger and nearer to one another according to their proximity to this part of the canal.

Though generally flattened and white, they were sometimes rounded, and of a ruddy or greyish color. I never saw, save in one case, a grey point at their centres, as is seen generally in the elliptical patches when healthy, or on the crypts found more or less frequently in the large intestine. In two others they were reddened somewhat; the first were miliary, but they became larger when nearer the cæcum, and had undergone in this latter part a similar ulceration to that of the elliptical patches.

The crypts which were more or less reddened, were not the only ones underneath which the cellular submucous tissue was diseased. This tissue commonly formed underneath those which had a white color small, rounded, whitish elevations,

which could be removed by scraping, and as these tumors did not appear to have orifices in any patient, we may with justice doubt whether they were really glands, at least, in the great majority of the cases. The following observation, which is the sole one I have made, in which the disease extended through the whole length of the small intestine, presents some doubtful circumstances on this point.

It is, moreover, remarkable that the crypts were ulcerated in three cases only, and always in the neighborhood of the cæcum. (Obs. 11, 18, 39.)

TWENTIETH OBSERVATION.*

Diarrhœa; anorexia; depression of mind at the beginning; pain in the throat for three days before entrance; increase of the diarrhœa and of the pains in the throat; symptoms of croup; delirium; death on *fourteenth day*. White granulations through the whole course of the small intestine; elliptical patches of the ileum red and softened; mesenteric glands, red, enlarged and softened, especially near the cæcum; false membrane upon the pharynx and air passages, &c.

A MALE domestic, æt. 23, who had resided at Paris eleven months, was of a bilious-sanguine temperament, of a strong, full, well-developed frame, and ordinarily in very good health, was admitted into the hospital of La Charité, August 12th, 1823, having been ill three days. The affection, which had been preceded by a slight sore throat, during forty-eight hours, had commenced with symptoms of universal fatigue, depres-

* This Observation is one of those which I have already given in my Memoir upon Croup. At the time of its former publication I omitted many details, which I give in this place, especially those in relation to the small intestine. — LOUIS.

sion of mind, anorexia, thirst, diarrhoea, slight pains at the epigastrium, which was somewhat sensible to pressure, and on the succeeding day chills, followed by heat and sweating, supervened. These symptoms had continued ; the diarrhoea had daily increased ; the soreness of the throat had not sensibly augmented.

13th. At morning visit ; face, somewhat flushed ; head, heavy ; patient had a somewhat sunken aspect ; pains in limbs and in loins ; anorexia ; tongue, greyish ; great thirst ; deglutition easy ; no pain nor redness in pharynx ; abdomen, soft, of its usual form and not painful on pressure ; ten dejections during the previous twenty-four hours, at times with colic pains ; urine, of a red color and voided with ease ; skin, warm and soft ; pulse at seventy-six, without any peculiarity ; cough, not frequent, but patient had always had a slight one from the period at which sore throat commenced ; respiratory murmur free from any râle.

The next day at visit, his skin was somewhat more hot ; pulse, at eighty-four ; other symptoms as on previous day ; no tinnitus aurium.

(Eighteen leeches to anus ; rice water with gum arabic in it, three times.)

The diarrhoea continuing, (ten to twelve dejections every twenty-four hours) an application of leeches was again made on 15th and 16th ; there was no dejection on 17th. His skin was quite hot ; patient had uneasy feelings, with some nausea during the night of 15th to 16th, and during this latter day, sensations as if eyes were dazzled and headache ; the pulse was somewhat diminished in volume, and at seventy-six ; the tongue whitish and villous.

A considerable epistaxis with pains in the throat occurred

on the night of 17th to 18th. On the morning of 18th, these pains continued, velum palati was red, not swollen ; deglutition difficult and frequently excited ; pricking sensations, with heat in the inflamed part ; pulse, sufficiently large, at eighty-eight ; skin, moderately warm ; feebleness less marked than previously ; intellectual faculties perfect ; appearance of countenance sufficiently natural.

(Rice water ; julep.)

19th. Sore throat continued ; upon amygdalæ and sides of uvula which was red and infiltrated, was a shining, somewhat opaque false membrane which lined likewise the pharynx ; the voice was slightly altered ; patient felt somewhat embarrassed about larynx and trachea at the moment of deglutition ; he was afraid to try to assuage his thirst, which was great, because of the great pain excited in the throat by so doing ; four dejections and copious sweats during the night. The pulse was rather small, at eighty ; appearance in countenance of general uneasiness and of sinking ; some rose colored lenticular spots upon abdomen.

(Twenty leeches about jaws.)

20th. Less sinking ; face, much more natural ; false membrane, much more opaque than yesterday ; voice, changed as in angina gutturalis ; region of larynx somewhat sensible to pressure ; respiration but little accelerated, (seventeen) ; patient felt worse than usual.

(Twenty leeches to neck ; whey.)

21st. (Leeches not applied.) The false membrane covered all the uvula, and extended a little in front of it ; deglutition caused insupportable pricking and tearing sensations about throat ; respiration at twenty-five ; pulse at ninety, somewhat contracted ; four dejections, with some colic-pains ; abdomen, supple ; other symptoms as before.

(Twenty leeches to neck ; frictions to the same part with 3 iv. of mercurial ointment ; two pills of pil. hydrarg. ten times ; emollient gargle ; whey.)

The frictions were not made ; delirium in night. 22d. Breath very fœtid ; croupy voice ; deglutition impossible ; speech very difficult ; a sort of indescribable embarrassment in the throat ; scarcely any traces of annoying sensations about larynx or trachea ; false membrane somewhat farther forward upon the roof of palate than before ; no sleep ; constant complaints and groanings ; anxious appearance ; pulse regular, at eighty-two.

(Touch edge of false membrane with muriatic acid.)

In the evening, complete aphony ; cough not frequent ; there was no shrill tracheal sound during æspiration, but there was heard, at a certain distance, a kind of trembling, which seemed to be in the trachea. Deglutition was impossible, for when the patient attempted to drink the fluids returned through the nostrils. Patient was very anxious as to the result of his disease, although he had experienced no access of suffocating sensations. Delirium again during the night ; patient got out of bed ; he also arose from it at six, A. M., the next day, and threw himself upon the patient lying next to him, and clung to him with so much force that it was with the greatest difficulty three men were able to pull them asunder. One quarter of an hour afterwards he died.

Opening of the corpse twenty-four hours after death.

EXTERIOR. — Great stiffness of body, which was very difficult to overcome. No stripes as from blows with rods upon the sides, or front part of trunk.

HEAD. — Veins of *meninges*, very much distended with blood ; *pia mater*, very red ; *cortical* substance of brain of a

rosy hue throughout; *medullary* very much injected; but both were of a healthy consistence; three small spoonfuls of serosity in the lateral *ventricles*. *Cerebellum*, in the same state as the brain.

NECK. — *Cervical glands*, of three times their usual size, of a crimson red color, and of good consistence. There was a *false membrane* upon the pharynx, uvula, velum palati, epiglottis and larynx; it was firmly adherent to the upper part of the pharynx, and less so at the portion nearest the œsophagus, beyond which no membrane was discovered. Its thickness and consistence diminished in the same manner; from a third of a line upon the epiglottis it became suddenly much less thick and less firm about the larynx, two inches below which it imperceptibly ceased. The mucous membrane of the *pharynx* was more or less red, and this redness, which was in patches, or as if from the touch of a brush, was seen, although of a much less intense hue, upon the *larynx* and *trachea*. The mucous follicles of the pharynx were considerably enlarged. Its muscular coat was three lines thick near the base of the cranium; somewhat less so in other parts; it was generally of a firm texture, and somewhat pale; there were some ecchymoses in some parts of it, especially near the mucous membrane. The *larynx* was merely somewhat smaller than usual.

CHEST. — The *lungs* filled exactly the cavity of the chest. They had posteriorly a slight purplish color; in front the color was natural. In their substance they had a vivid red tint, and throughout there was a great number of spots entirely distinct from the surrounding tissue, marked by their firmness of texture, their granulated aspect, their red color, which increased in intensity from above downwards. The *heart* was healthy; the *aorta* had some red spots in it.

ABDOMEN. — *Æsophagus*, well. The *stomach* contained

a moderate quantity of yellowish turbid fluid. Its mucous membrane was of a pale rose color in the great cul-de-sac, and from that part to within three inches of pylorus, were red, irregular lines, which crossed one another in a diamond form ; it had an irregular, not well marked, mameloned appearance along the great curvature. Its thickness was about one third greater than usual, its consistence somewhat less, except in the three feet nearest the pylorus. The mucous membrane of the *duodenum* was slightly softened. The *small intestine* contained rather a large quantity of yellowish mucus through its whole extent. Its internal membrane was generally yellowish in the jejunum ; in the ileum were six red bands (zones) within its first six or eight feet. This same membrane was throughout its whole extent of nearly double the usual thickness, and of a less firm texture than in health, and was raised by numerous *white miliary granulations* in the neighborhood of the duodenum, which were larger and nearer to one another according to their proximity to the ileo-cæcal valve, near which they were three or four lines only apart ; they had neither open orifices, nor greyish nor blackish points in their centres. When the mucous membrane was raised they were likewise raised, and the cellular tissue underneath had nothing remarkable about it. The *elliptical patches* were thin and covered with many grey points in the jejunum ; they were of a more or less vivid red, and thickened in the ileum. This thickening was owing to hypertrophy of the mucous and subjacent cellular tissues, the latter of which was not less red than the former. The *cæcum* was of an obscure red color ; the *colon* had spots of vivid red in some parts of it, and its mucous membrane was twice as thick as usual and evidently softened. The *mesenteric glands* were enlarged and of an amaranthine red color, especially in the neighborhood of the cæcum, where

they were softened. Those of the *mesocolon* were more than twice their usual size, of an obscure red color. The *liver* was a little red and flabby; the *gall-bladder* was distended with a great quantity of reddish, clear liquid; the *pancreas* was of a pale rose color; the *spleen* was very much softened, of a color of lees of wine, and three times as large as usual.

Although the granulations found in the small intestine remained adherent to the mucous membrane when it was raised in strips, yet they were white, and through the whole canal none were found with open orifices, or blackish points in their centres, whatever was their size. The subjacent cellular tissue had not undergone any appreciable change of structure, so that under whatever point of view we examine them, we find they differed very much from the elliptical patches in the ileum, whose mucous membrane and subjacent cellular tissue were equally red and more or less altered in structure. Hence, it appears that there may be some doubt as to their nature, and the tissue in which they were situated. The softened and enlarged mesenteric glands, larger near the cæcum than any where else, prove, moreover, that the morbid changes of the elliptical patches proceeded, in the present case, as they have done in the preceding ones. On the other hand, the patches not being ulcerated, the mucous membrane of both intestines being very much thickened, and more or less softened, we cannot decide whether the membrane surrounding them were affected simultaneously with them or afterwards.

As to the symptoms peculiar to the affection, if they were slightly marked, they nevertheless announced, at their commencement, that the seat of disease was in the abdomen. Thus we found that under every point of view, the preceding

case followed the course the disease usually pursues in the majority of cases.

The symptoms of croup were as well marked as in cases which occur in perfectly healthy persons ; but what it is important to remark is this, that, whilst in one of the observations previously given, the same disease did not appear to excite any pain, in this case it was very severe and agonizing. This is easily explained by the state of the cerebral functions which were almost perfectly well in the present case when the croup commenced, whilst they were greatly diseased in the other. (Obs. 7.)

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

1st. The small intestine was *larger* than usual in thirteen out of sixty-five patients, but this increased size was not remarkable except in two cases of pneumonia, in whom it was somewhat marked. I make no mention of two other individuals who died of scarlatina and peripneumonia, in whom the meteorism was considerable, but it came on after death with emphysema of the subcutaneous cellular tissue.

The mucous membrane was very much softened in patients who died of pneumonia, and in whom there was no emphysema.

2d. The intestine contained, in every case, a greater or less quantity of *mucus*. This mucus was copious in a third part of the cases, nearly in the same proportion as in those who died of typhus, but this proportion was greater in the pneumonic patients, in half of whom it was found, than in any other affection.

Moreover, the condition of the mucous membrane will not account for these differences in this class of cases more easily than in the preceding, and, as after the typhoid affection, the quantity of mucus was greater according as the subjects died

more early in the disease. So that the mean duration of the disease was fifteen days, in one set, twenty-seven in the others.

3d. The *bile* was copious in seven patients only ; much less frequently, therefore, than among the patients who died of the disease we are examining in this work, and this agrees, as we shall see hereafter, with the state of the bile remaining in the gall-bladder. Its color was not always the same, and five times I found the mucus stained by it of a deep orange yellow, approaching a red hue, which may be attributed possibly as before, to the exhalation of a small quantity of blood, inasmuch as the mucous membrane was more or less red and softened in these cases, chiefly in the spots where the bile had this color.

Facts similar to those which I have given in reference to the typhoid disease, can hardly leave any doubt as to the correctness of this mode of viewing the subject. Thus the mucus was wholly red in the pneumonic patients in whom the mucous membrane was softened, and of a more or less deeply marked red color in the corresponding part. The same color was found in four patients who died of pneumonia, pericarditis, or softening of the brain, in which we found a quantity of liquid which had the color of dregs of wine.

4th. The mucous membrane was *white* throughout, in eighteen out of sixty-four patients in whom this membrane was examined with care upon this point ; nearly in the same proportion among the pneumonic patients as in other individuals.

This whiteness was perfect except in some points of eight cases in which was a *rose* or *red* hue ; in a ninth the redness was perceptible for the space of a foot only next the cæcum. It was observed in different degrees, through the whole length of the jejunum in two patients, and through the whole canal in eleven.

The *yellow* color was found here and there in six subjects.

Finally, the mucous membrane was *greyish* through its whole extent in two cases, and *bluish* near the cæcum, for the space of about two feet in three others.

This last fact is remarkable inasmuch as it supports what has been stated above as to the origin of the blue color; the red color, of which it seems to be merely a modification, being more marked near the cæcum than any where else, when it is found through a large extent of the small intestine, and being limited entirely to this region in patients in whom the color extends over a small space only. I would remark, however, that in one case in which it was owing to a very great number of quite distinct black points, more or less near one another, throughout the whole extent of the jejunum, this grey color was observed in a patient who died of pneumonia, at the age of fifty-seven, on the fourth day of the disease, and in whom it was impossible to suppose the appearance to be owing to a recent vivid injection, which had commenced its retrograde course.*

5th. The mucous membrane had its natural degree of *consistence* throughout in a little more than a fourth part of the cases. It was somewhat softened in the remainder as follows. In some points only, in three patients; in the three or four last feet of the ileum, in eight; in the second half of this intestine,

* Perhaps it will be said that this grey color was the consequence of some old inflammation. But this would be an assertion without proof, and we cannot believe in it, until it shall be demonstrated by a long series of facts, that the grey color which succeeds the red color of inflamed parts, can remain a very long time, many years perhaps, and that there is no other source than inflammation, for a change of color. Now this is what cannot be admitted, because the color of our organs, that of the lungs, for example, undergoes with age changes which cannot be attributed to any thing but some primordial law, which applies equally to all patients. — LOUIS.

in the thirteenth ; throughout its whole length, in the fourteenth ; in the jejunum and ileum, in twenty-five of sixty-four cases in which the consistence was noted with care.

Moreover, the proportion of cases of softening was not the same in all diseases. It was greater in persons who died of pneumonia than in those who died of any other affection ; so that, of the first, four only out of thirty had the mucous membrane entirely healthy throughout its whole extent. Though it varied in degree, the softening was, if we except two cases of it, always more marked near the cæcum than any where else, and once I found it considerable at the two extremities, while in the central third there were no appearances of it.

These facts tend to confirm the opinions to which I have been led, with reference to the causes to which we ought to attribute this softening in the typhoid affection. The mucous membrane was, as in fact we must have observed, not so frequently red as it was softened, and when these two lesions existed simultaneously, the softening was more extensive than the redness, and thickening was found in two cases only. How can we conceive of the softening having been always in these cases the consequence of inflammation ?

6th. The *elliptical patches* had no *special* redness, nor thickening ; they did not even participate always in the softening and redness of the surrounding mucous membrane. One single time, in a patient who seemed to die of scarlatina on the second day after his entrance into the hospital, I found three patches red and somewhat thickened, without any other morbid change ; but as so slight a lesion, in an individual, the history of whose symptoms I am almost completely ignorant of, cannot properly be produced in opposition to those we have now spoken of, my proposition is not the less rigorously exact.

7th. Finally, I remarked in five patients in the last part of

the ileum, a greater or less number of *solitary crypts or glands*, more or less enlarged, white or reddish ; and what seems to me very worthy of attention, three of these cases were relative to individuals who died of scarlatina, the only persons who died of this affection of whom I made an autopsy. This would seem to prove that the enlargement of the glands, (supposing this was the lesion) if not constant, is of very frequent occurrence among those who die of this affection.

Thus, except the changes in the elliptical patches, all the lesions of the mucous membrane of the small intestine observed in cases of the typhoid affection were found in individuals who died of very different acute diseases. The proportion, in which they were observed, presented likewise but very little difference in these two classes of patients, with the exception of the solitary crypts, the morbid changes of which were more frequent among the first than the second.

These diseases being common to individuals who died of such a variety of diseases had nothing characteristic about them, and they prove, so far as they can, the law to be correct, which analogous lesions revealed to us in relation to the mucous membrane of the stomach, viz. that when an acute affection in any part of the body gives rise to febrile phenomena of some intensity, and which last some time, the mucous membrane of the small intestine is, in the great majority of cases, more or less seriously affected at a certain period of the disease, according to the predisposition of the individual. The intensity of the fever seems to have great influence in producing these secondary alterations, the softening which was the most remarkable of all, having been found more commonly among persons affected with pneumonia than among those who died of any other disease, save of typhus.

On the other hand, the elliptical patches having presented no morbid changes after any disease, except after the affection we are examining, this morbid change having been constant, generally very grave, always developed according to the same law, whether death took place eight days, or at a much greater space of time after the beginning of the disease, and it having been in some cases, as it were, the sole lesion, we must not consider it merely as peculiar to typhus affections, but as forming their anatomical characteristic as much as tubercles do that of phthisis, whatever may be the cause of their development. The general history of the lesions which remain to be described will, if that be possible, make this fact still more evident.

ARTICLE VI.

LARGE INTESTINE.

Volume ; nature of the contents ; color, consistence, thickness of the mucous membrane ; crypts or solitary glands ; flattened tumors ; ulcerations.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

SEC. 1. — Size.

The size of the large intestine was oftener increased than that of the small intestine, or in twenty-two out of thirty-nine cases, in which number are not reckoned ten who died of perforation. The size of the large intestine was, likewise, much greater than that of the small intestine.

The meteorism was considerable in three quarters of the patients who had any of it, or in sixteen out of the twenty-two. It ceased at a short distance before or after the sigmoid flexure of the colon, and in some cases, in which the intestine was measured in three points, very nearly equally distant between this last limit and the cæcum, it had progressively on leaving

this last part four inches and a half, five inches and a half, and three inches in size. This is an uncommon distention, and must have caused during life great uneasiness, and have formed a great obstacle to the action of the viscera of the abdomen and of the chest, and it appears to have been the same before and after death.

The meteorism, when arrived to this degree, caused a greater or less number of circumvolutions to be seen at these points where the canal was most loosely attached. This canal was found in front of the stomach, which it more or less completely covered, thrusting up the organs of the abdomen into the chest. We must remember this fact in practice in order to avoid errors in diagnosis.

I heard an able physician declare a patient to have hepatisation of the right lung, who was affected with typhus fever, because the abdomen being very greatly meteorised, he found a flat sound, much higher than usual, on percussing the right back of the chest. But the autopsy very soon showed the lung to be perfectly healthy, and that the cause of the flatness was the liver, which had been pushed up very high by the great distention of the large intestine. We can understand also, if we remember the change in situation of this canal under these circumstances, why the greater or less increase of size of the epigastric region, its extreme resonance, the pain sometimes seated there, cannot be attributed certainly to the stomach, still more because the size of this organ is rarely very great, as we have already mentioned.

One fact, which I have already mentioned, and which it will be proper to speak of again, is this, viz. the thickness of the coats of the intestine was not diminished even in those cases where there was most distention, and sometimes it was evidently increased at the expense of the muscular and mucous

coats without any traces of inflammation. And as a similar thickening could not take place, in case the meteorism came on after death, one could be in no doubt as to the period of its appearance, even if he should not have seen the patient previous to death, provided there be thickening. But this thickening follows those laws merely which operate usually on the coats of the small intestine, when more or less distended in cases of strangulation or prolonged congestion of blood in some parts of the canal, and it is, without doubt, a consequence of the reaction of the membranes upon the gases by which they are distended.

The meteorism could not be attributed to any appreciable lesion of the mucous membrane of the colon, no one having been constant, as we shall soon see, and less to ulcerations than to any other, since they were found in six cases only. Still less can we appeal to this lesion as the cause of the meteorism, inasmuch as it was large, serious, and almost always present in the small intestine, which was less frequently meteorised than the colon, and always, with two exceptions merely, to a very small degree.

One cannot assert in opposition to this opinion, that the meteorism of the *small intestine* disappeared some time before death. For its supposed cause, the ulcers, remaining always, and in the greater proportion of cases being by no means in the process of cure, at the time the disease proved fatal, one cannot see how the effect could have ceased. And supposing the meteorism to have disappeared before death in those who died between the twentieth and thirtieth days, at a somewhat remote period therefore from the commencement of the disease, it must have been quite marked in those who died between the eighth and fifteenth days; now this, as we have already seen, was not the fact. In addition to this we may say,

that if meteorism had existed in the small intestine during a certain time and to a considerable degree, we should probably have found some traces of it after death, in the thickening of its parietes, which would have taken place in a certain number of the patients. We cannot, therefore, admit that if the small intestine is slightly and but seldom meteorised after death, it is because its meteorism is either considerably diminished or disappears before that period. We must conclude, from what precedes, that during life, as after death, the principal and often the only seat of meteorism is the large intestine.

Moreover, the meteorism was much more frequent in patients who died between the twentieth and thirtieth days than in those who died before or after this period ; so that fourteen out of the twenty-two in whom meteorism was observed died during this period, or in other words, out of eighteen patients who died during the third period, and in whom I noticed the size of the intestine, fourteen presented some meteorism of this canal.

SEC. 2. — Contents of the Intestine.

They generally were not abundant ; they had the consistence of thin pap or jelly, in the majority of cases, they were soft, and retained the form to a greater or less extent of the canal in a small number of patients. Three examples of the last degree of consistence were found in those who died between the eighth and fifteenth days ; as many among those who died between the twentieth and thirtieth, and four in patients who died after this period. And what is worthy of remark is this, that the mucous membrane of the colon was softened in many of them, as I have already shown in another work, in analogous cases, in patients who died of chronic diseases.* Finally, the

* See my " *Researches upon Phthisis*," — *LOUIS*.

fæcal matter had merely the consistence of a simple, more or less viscid fluid in four patients, and in three of those cases the mucous membrane had undergone very serious morbid changes. (Obs. 4, 8, 11, 35.)

As it respects the color of the fæcal matter, it was either green or yellow, very rarely red. The yellow color was the most frequent, the green predominated when the fæces were thin. Twice I found in the cæcum and right part of the colon a red fluid, and in both there were numerous and deep ulcerations, and to these doubtless we must refer this color.

SEC. 3. — Color of the Mucous Membrane.

It was as various as that of the small intestine.

It was *white* in thirteen of the forty-three cases in which it was examined, but in different proportions, according to the period of the disease at which the patients died, to wit,

In 5 patients out of 10 of the first series,

1	"	"	6	"	second	"
5	"	"	18	"	third	"
2	"	"	9	"	fourth	"

Uniform *redness* was observed in fifteen cases. It was general in three patients of the first series; limited to a greater or less extent of surface in twelve others, to wit,

In 3 patients of the first series, in the cæcum in one case; sigmoid flexure and rectum in two others.

3 patients of the second series, in the rectum,

4	"	third	"	in half of the intestine,
2	"	fourth	"	in the sigmoid flexure,

or cæcum.

It was observed in the form of bands or patches, varying in size and distance from one another, in four of the patients.

The *yellow* color, which was that of the *feces*, was seen in two individuals through half or the whole length of the intestine.

The *grey* color was in nine patients, among whom were none of those who died between the eighth and twentieth days of the disease. Six died between the twentieth and thirtieth days (Obs. 4, 19, 24, 29, 39) ; the three others at a much later period. That is to say, the mucous membrane of the large intestine never presented any greyish tint, except in patients who had died at a more or less distant period from the commencement of the disease, and the frequency of this color was in proportion to the length of time the disease lasted before proving fatal. If the reader remembers what was said with reference to this color when seen in the small intestine, he will be led to think that in the large intestine likewise this color was, at least in many cases, merely a modification of the red.

SEC. 4. — Consistence of the Membrane.

This consistence was natural throughout the whole length of the intestine in thirteen cases, or a little less than the third part of those which we are now examining ; these cases were as follows,

In 4 patients out of 9 in the first series,	
1 " " 6 " second "	
7 " " 20 " third "	
1 " " 7 " fourth "	

It was diminished in various degrees and extent in the other cases, as follows,

1st. Through the whole length of the canal,

In 3 patients of the first series,

1	"	"	second "
8	"	"	third "
4	"	"	fourth "

and to a considerable degree in two individuals of the first and second series ; four of the third ; and two of the fourth.

2d. Through the first or second half of the intestine.

In 1 patient of the first series,

2	"	"	second "
3	"	"	third "
2	"	"	fourth "

and to a moderate degree in the majority of the cases.

3d. In the cæcum and rectum, in a patient of the second series.

4th. In the cæcum only in two individuals of the first and third series.

5th. Finally, here and there in different parts of the whole track of the intestine, in three patients ; one of the first, two of the second series.

That is to say, the proportion of cases of softening was greater among those who died at an advanced period of the disease than among those who died at an earlier time.

In this place the question again arises relative to the cause of softening, whether or not it was always dependent upon inflammation. Let us examine the first sixteen cases in which it was *general*, and let us begin with those (eight) who had it in a very marked degree.

In addition to the softening, there was in five of the eight cases, a greater or less thickening of the mucous membrane, and likewise a more or less vivid red color, which was general in two cases (Obs. 20, 34) ; limited to the first half of the intestine in another (Obs. 32) ; in spots in a fourth (Obs. 3), and a greyish tint was observed in a fifth.

There is no doubt, that in the first two cases the softening was inflammatory, and that such also was the fact in the third and fourth, in those spots where there was a red color. But was this the fact for those spots, where the mucous membrane was pale ; and the fifth case in which throughout the whole extent of the canal there was merely a grey color ? If we cannot exactly understand how two contiguous portions of the same organ, which were *equally* thickened and softened, should be one white, the other red, their thickening and softening being owing to the same cause, we can with much less ease understand how this cause can be put aside as not the true one, merely because one of its effects was not found, perhaps had disappeared, the two others, the most grave, remaining in a most remarkable degree. Thus it seems to be nearly certain that in the third and fourth cases, there was inflammation of the mucous membrane through nearly its *whole* extent. This probably was the case in the fifth case, since the grey color appeared to be very often a more or less remote consequence of the inflammatory red tint, and because in this case the glands of the mesocolon presented all the appearances of severe inflammation. This last fact has not, as we shall soon see, all the value one would be inclined to give to it, relative to the object which now occupies us.

In the three cases in which there was great softening without thickening, there was a vivid red color in one, (Obs. 37,) a greyish color in the other, (Obs. 15,) and very probably inflammation was the cause in both. No mention was made of the color in the third.

In those cases in which there was universal softening, but in a less degree, there was no thickening, and there was no universal redness in a single patient. The redness was confined to the cæcum and rectum, in two individuals (Obs. 18, 19 ;)

it was observed in larger or smaller spots, mixed with grey or blue in a third, who died on the twenty-fifth day of the disease. In the others, the mucous membrane was yellow or pale. It evidently is impossible, from the reasons already given with reference to the subject of softening of the mucous membrane of the small intestine, to consider this, of which we are now speaking, as inflammatory; there being nothing, moreover, to shew that it had taken a retrograde course, if we except one case, in which the amaranthine red, and the spots of the same color were mingled with grey and blue ones, which case is evidently doubtful, but inflammation seems to have been its cause.

In *fifteen* patients in whom the softening was *partial*, three had it to a remarkable degree; the mucous membrane was thickened in the corresponding point in one of the two (Obs. 11); red in second (Obs. 14); greyish or injected in a third (Obs. 24). The softening was but slight in the other patients, three of whom only had the mucous membrane at the same time softened and thickened. It was of a pale rose color in one of these last. Hence it seems that partial as well as general softening does not always depend upon inflammation as its cause.

SEC. 5. — Crypts or solitary Glands; flattened tumors; ulcerations.

Some *crypts* or solitary glands, somewhat flattened, whitish, and about the size and form of a lentil, having brownish grey points at their centres, were found in eight patients; they were ordinarily few in number, and spread over a greater or less extent of surface, without any evident change of structure in the mucous membrane corresponding to them. In the ninth, who died on the eighth day, these crypts were found from one extremity to the other of the canal, they were numerous, and

nearer one another in the neighborhood of the cæcum than any where else ; they were generally red, and most of them were ulcerated at their summits, and the submucous and muscular coats were thickened slightly in the corresponding parts. (Obs. 4.)

Four had *hard patches* like those of the small intestine, but much less in size, from three to four lines in diameter, of somewhat irregularly rounded forms ; limited to the cæcum and ascending colon in two cases (Obs. 10, 12) ; extended over a much larger space, from the cæcum to the sigmoid flexure of the colon, in two others.

These were cases of individuals who died on the eighth, ninth, twenty-eighth and thirtieth days of disease ; so that in this as well as the small intestine, the hard patches were not found in those whose disease continued long, and they were proportionably more frequent among those who died early, than in those who fell late in the disease. Moreover, they were ulcerated in one case only, and did not have that friability which was so marked in the analogous patches of the small intestine.

Ulcerations were found in fourteen patients ; generally to the number of two or three, rarely twelve ; they were small, from four to ten lines in length, sometimes from twenty to thirty. Their edges, (with but one exception, that of a patient in whom were hard, somewhat prominent and ulcerated patches,) were flattened, somewhat rounded ; the submucous membrane had been laid bare by them, and it was often thickened at the same parts. This membrane, though often appearing partially destroyed, was not so entirely except in one case, and in that the muscular coat was entirely exposed. (Obs. 32.)

They were seated generally in the cæcum, where they were found in ten patients ; and they were either entirely limited to

this portion of the intestine, or they were found simultaneously in other parts. They were found in the cæcum and ascending colon, in five patients (Obs. 2, 5, 14, 22); in the cæcum and left part of the colon, in a sixth. (Obs. 35.) They were confined to the transverse colon in a seventh (Obs. 33); to the portions of the canal where this part is connected with the right and left portion, in an eighth; to the rectum in a last case, in which they were near the anus, and a small submucous abscess, the only one I found in any of the cases we are examining.*

The proportion of cases in which these ulcers were found, was not the same in the different groups of patients.

The 10 of the first group had 1 example,

7	"	second	"	2	"
20	"	third	"	9	"
9	"	fourth	"	2	"

That is to say, generally the frequency of this lesion was in proportion to the length of time the disease had lasted.†

But in what were these ulcers situated? Were they in the points which corresponded to the crypts or in the intervening spaces? I have previously cited a case in which the crypts were evidently ulcerated, so that it is natural for one to believe that they were the seat of the ulcerations of many patients. It must, however, appear equally as probable that these ulcerations arose in the intervening spaces in many cases, and principally in those where no crypts were perceived in any point. So that the ulcerations of the large intestine seem to have their development in two distinct textures, the crypts or solitary glands, and the spaces intervening between them.

* See Appendix, Article upon the Verification of the Tables. — H. I. B.

† See Appendix, *ibid.*

If we could divide the ulcerations of the large intestine into two classes, hard and soft, still they would differ from those of the small intestine in frequency of occurrence, their number, their depth, and their structure. They were large, numerous and very severe in the small intestine, in which there were some almost always ; they were small, superficial, and few in number in the large intestine, in which were some found only in a little more than a quarter of the patients. The cellular membrane, which had been exposed by them, had no redness or thickening, as was observed in all the cases of ulceration in the small intestine ; the muscular coat, corresponding to it, was not exposed except in one, and there was no commencement of cicatrization in any one. Therefore we must consider them as having been consequent upon those of the ileum, and, therefore, although they have something about them peculiar to this disease, (as I shall show when terminating this article,) they cannot be considered as forming one of its essential anatomical characteristics.

What has been said relatively to the commencement of the ulcerations applies equally well to the hard patches, which were not friable at their surfaces, and which were ulcerated in one case only, and were, moreover, very superficial, as I have remarked above.

The reddening, softening and thickening of the mucous membrane of the large intestine having not occurred, by any means, in all the cases of the typhoid affection, whatever was the group under which they were classed, ought, however, to be considered as secondary lesions, or as consequent upon those of the small intestine ; so that all the lesions of the colon had this character.

I do not pretend that these morbid changes of the large intestine do never commence at the same time that those of the

elliptical patches of the ileum do ; we certainly see sometimes diarrhoea commence at the same moment that pneumonia does. But this case is certainly a rare one.

The following observation might seem, at the first glance, to be an example of the fact, and for this reason I give it in this place.

TWENTY-FIRST OBSERVATION.

Diarrhoea ; chills ; anorexia ; thirst ; restlessness, at the commencement ; afterwards, slight cough ; transient pains in hypochondrium and epigastrium ; some delirium ; somnolency ; meteorism ; death on *twenty-second day*. Elliptical patches of the ileum thickened, softened ; mesenteric glands, corresponding to them, enlarged, softened, of an onion-peel color ; two small ulcerations in the cæcum, one in the larynx ; partial destruction of the epiglottis.

A FEMALE COOK, of a very strong constitution and quite tall, came to Paris during the last days of February, 1826, and was admitted into the hospital of La Charité on 5th of the following April, having been at that time ill two weeks. Having preferred to journey on foot, she had come to Paris, and had walked seventy leagues in six days, and being but slightly fatigued, she entered a service two days after her arrival. Her catamenia, which appeared first at the age of sixteen, had always returned at regular periods, and after the epoch of their last appearance, fifteen days before the commencement of the disease, she had had a colorless discharge from the vagina which caused no pain, and which she attributed to her having been obliged to exert herself in rubbing, in the performance of her daily work.

At the commencement, chills, shivering, followed by heat

and sweat ; lassitude ; pains in the limbs ; tendency to sleep ; restless nights ; thirst ; diminution of appetite ; slight diarrhoea. These symptoms continued ; the chills returned every day at different hours, once or many times ; the anorexia was complete during the last week ; one or two liquid dejections during twenty-four hours, and after the fifth day pains in head, but no epistaxis. The patient ate but little ; drank infusion of lime tree (tilleul) flowers, and had employed no other remedy.

On 6th, face somewhat animated, features natural ; intelligence, perfect ; memory, prompt and sure ; slight headache ; inability to sleep ; pain in the limbs ; senses, perfect ; lips, dry ; tongue slightly moistened, whitish at centre, of a vivid red around edges ; complete anorexia ; intense thirst ; the whole abdomen soft, not pained by pressure ; two liquid dejections ; pulse, large, regular, at a hundred and eight ; skin, quite hot and very red, without any marked injection of vessels or eruption of any kind ; cough, slight and seldom for two days ; respiration, but little accelerated ; sonorous râle at the right side of the chest ; some white or yellowish sputa ; the patient complained only of pains in the limbs.

(Solution of simple oxymel, three times ; venesection to § xij ; emollient enema ; strict diet.)

Only one dejection, and no inclination to sleep during the day. On 7th, although the features of the patient were still natural, she felt less well than she did the day before ; she was feeble, complained of much suffering in the limbs, and had an intense headache ; the epigastrium and left hypochondrium were slightly pained by pressure then for the first time ; pulse, at a hundred, large and rather soft ; skin, very hot and dry ; respiration full ; sonorous râle throughout the whole of chest ; other symptoms as on previous day.

(Petit-lait emuls.; solut. de sir. tartar, twice; flaxseed enema; emollient fomentations.)

The patient did not utter a word during the whole day until evening, when having much fever and a flushed face, she told the nurse that she was about to die. At midnight she arose, ran about the ward, and then returned to bed again, without having made any disturbance. On 8th, at morning visit, she did not remember this fact, her face was more flushed than usual, somewhat puffed up, of a dull expression, showing embarrassment and uncomfortable sensations; her limbs felt to her as if benumbed; she could not take a single step because of her extreme weakness. Her tongue was of a greenish white color, less red than on the day before; the form of the abdomen was somewhat altered, patient bore very well pressure upon every part of it, except in the region of the cæcum, and there, compression was annoying; the left hypochondrium was as supple as the rest of the abdomen. Some rose lenticular spots were seen over its surface; the urine had been passed involuntarily during the night.

(Solut. de sir. tartar.; petit-lait tamarin; emollient enema; sinapisms to legs; eighteen leeches about ears.)

No drowsiness during the day, but during the evening and night slight delirium; patient threatened to get out of bed. On 9th, face somewhat more natural than on previous day; slight deafness; patient said she was certain she should not live two days, but could not tell the seat of her greatest trouble; the epigastrium and the left hypochondrium were sensible to pressure; skin, rather hot; pulse, at one hundred; one involuntary dejection during the night.

(Solut. de sir. tart. twice; emollient enema, and fomentations; blisters to legs.)

During the night patient was at times overcome with drow-

siness ; but several times she attempted to get out of bed, and, as on previous day, the urine was involuntary. On 10th, face rather pale than red, features changed, and face looked as if dusty ; answers, brief, "yes" or "no;" tongue, dry ; abdomen, much meteorised, somewhat sensible to pressure ; pulse, at one hundred and twenty, regular ; respiratory murmur, mixed with a sonorous râle ; skin warm.

During the day the patient was sufficiently tranquil, made some natural remarks ; tried often to uncover herself, and had nausea. On 11th, wildness of expression ; dusty appearance of face still more marked ; taciturnity ; abdomen, slightly meteorised. Hypochondria a little more sensible than natural to firm pressure ; crepitation below mammæ ; respiration, very much accelerated ; pulse, sometimes unequal in strength.

Delirium and nausea during the night ; on 12th, the features were still more changed ; considerable drowsiness ; the precordial region was flat on percussion.

On the next day, at six, A. M., she died ; having said on the evening before that she felt she was dying.

Opening of the corpse twenty-six hours after death.

EXTERIOR. — *Abdomen*, of a perfectly natural shape, little emaciation ; muscles strong and of a good color.

HEAD. — Occipito-frontal suture very prominent ; some minute apertures in the *dura mater*, through which penetrated some white opaque granulations, which were in the *arachnoid*, along the course of the longitudinal sinus. The *cerebral veins* contained but very little blood ; there was not the slightest effusion under the *arachnoid* ; and a very slight quantity of fluid in the left ventricle only. *Pia mater*, a little injected ; *cortical substance* of the brain and cerebellum, of a distinct

violet color; *medullary* had many bloody points in it; both were of a good consistence.

NECK. — The *amygdalæ* were of double their usual size, and the right contained two little abscesses with pus in them. The *epiglottis* was entirely destroyed at the left side of its upper part, for the space of two lines. Between the *arytenoid* cartilages was a superficial ulceration, one line in diameter. The *trachea* was of a vivid red color, but otherwise its mucous membrane was healthy.

CHEST. — The *heart* was somewhat less firm than usual. *Aorta*, healthy. The left *lung* was heavy; its upper lobe was in the first stage of inflammation for the space of two inches, and the anterior edge was hepatized to about half of this extent; it was of a pale red color and somewhat friable throughout the remainder of this lobe. Its lower lobe had a blackish color behind, and there was a very slight congestion of blood with commencement of inflammation. Some congestion throughout the whole of the *left lung*, except in some lobules in the upper lobe which were hepatized.

ABDOMEN. — The *æsofagus* was healthy. The *stomach* was a little larger than usual, and contained a moderate quantity of yellowish liquid. Its mucous membrane was red in a part of its large extremity. (This redness was composed of numerous minute points, which made their color appear one continued shade of red, when viewed at a little distance.) The membrane was sufficiently thick and strong at this part; it was swollen in some others by effusion under the cellular tissue corresponding to them; it was somewhat mamelonated, and slightly softened in its pyloric half. The *duodenum* was healthy, except that its mucous membrane was rather softer than natural. The *small intestine* was of medium size, and contained in some points a small quantity of reddish mucus.

Its lining membrane was somewhat red and minutely injected in its first quarter ; afterwards, it was of a yellowish white, pale, or slightly injected ; it was softened throughout, gave strips from three to four lines long in first two thirds, from one to two lines only, and sometimes less in the last five feet of the ileum, in which were twelve *elliptical patches*, generally of a pale red color. These patches, from fifteen to twenty lines in their greatest diameter, much larger near the cæcum than any where else, formed projections more than a millimeter thick above the surrounding parts ; they were not ulcerated, and presented merely their usual appearance exaggerated, for the crypts of which they were composed, were easily seen with their open mouths, about the size of a small pin's head. When placed in water, a great number of small membranous portions, or fringes floated from them. The cellular tissue, corresponding to them, was red and thickened. The portion of the small intestine next the ileo-cæcal valve, for the space of two inches and a half, and around the whole circumference of the intestine, was red and swollen in consequence of the enlargement of the irregular, small patches, which are found here in a state of health, and which vary in number and proximity to one another. There were only three miliary, whitish, isolated glands or crypts in the last five feet. The *large intestine* contained rather a large quantity of fæcal matter, which was thick, but did not take the form of the intestine ; the *cæcum* was very much distended ; the *colon* was of medium size. Its mucous membrane was greenish or whitish, and very much softened in its first third, gradually becoming after that more consistent, so as to give strips from five to six lines long. There were two small ulcerations with flattened edges, and by which the cellular membrane had been laid bare in the cæcum. The *mesenteric glands*, corresponding to the patches of the jejunum, were

about the size of hazelnuts, either larger, or smaller, of a deep onion-peel color, and were softened. The *liver* was enlarged, somewhat soft, dry in the interior, of a uniform color, in which the two substances composing the organ were distinguished with difficulty. The bile of the *gall-bladder* was of an apricot yellow color and very viscid; the *spleen*, larger than natural, was a little softened, of a deep blackish color; the *ovaries* were soft and of a livid red internally. The remainder of the organs had nothing remarkable about them.

Although the diarrhoea was very trifling, the meteorism very slight and transitory, the nature of the disease was easily recognised as much from the numerous symptoms as from the course the whole of the symptoms pursued, and also because, as we shall hereafter see, they could not have been those of any other affection. But although in patients who die at or long before the twentieth day, the elliptical patches of the ileum are ulcerated to a greater or less extent, they presented, in this case, as sole lesion, simply a more or less vivid red color, with some softening and thickening. The mucous membrane of the cæcum was, on the contrary, ulcerated to a small extent, so that we might believe, at the first glance, that the disease pursued a different course from that which we have observed heretofore; that it began in the cæcum, and not in that part of the small intestine nearest the ileo-cæcal valve.

And supposing that this were really the case, as this fact is the only one I have ever seen of the kind, what has been said with regard to the morbid changes in the elliptical patches in the ileum, and of their time of beginning, would not be less exact. This opinion seems much more reasonable, from the fact that ulcerations of the large intestine are found after other acute diseases, as I have already shown, consequently the only

inference we could make from this fact is, that the disease we are studying was preceded, in the present instance, for an indefinite number of days, by an inflammation of the colon. But a more serious examination of the subject will lead to different views.

The ulceration of the cæcum was not, in fact, the only one observed in the patient, whose history we are now analyzing. There was one in the larynx, and the epiglottis was partly destroyed. But we shall soon see that this ulceration is almost peculiar to patients dying of the typhoid disease ; and if it is impossible it should have preceded the morbid change with which it seems connected, (that of the elliptical patches of the ileum,) there is no better reason for believing that the case was different in regard to the two small ulcerations in the cæcum, and we must acknowledge that the lesions of the large intestine were, probably, in this case as in the others, consecutive upon those of the small ; that the former were the consequences of the latter. This observation is not less remarkable from the proof it affords of the extreme difficulty, if not impossibility of justly appreciating particular facts, when we are ignorant of the laws deduced for an accurate comparison of a great number of observations of the same kind. In what light must we view, therefore, the long commentaries which many authors make upon the isolated facts which they publish, and this without any knowledge of the general laws connected with them ? and what good can result from these vain demonstrations of profound learning and sagacity ?

Excepting the signs deduced from auscultation and percussion, the pneumonia caused no symptoms which would have made any one suspect the existence of it ; but this is by no means remarkable, inasmuch as the disease began at a period at which cerebral symptoms already existed. But it may be

surprising that the diarrhoea was so slight, when we consider the great changes that had taken place in the mucous membranes of the small intestine and colon, unless we suppose, which is probable, that these two-fold lesions commenced sometime during the three or four last days, for then this latent state of the affection could be accounted for, as the latent pneumonia was, by the presence of the cerebral affection.

The cerebral symptoms were slight, although there was a vivid injection of the cortical substance of the brain, which was of a violet red color. But this is not the first time that we have been struck with this apparent anomaly, and we shall soon examine into the subject.

The following observation is an example of the small submucous abscess found in the rectum, of which we spoke previously.

TWENTY-SECOND OBSERVATION.

Headache; anorexia; cough, at the commencement; afterwards, somnolency; some stupor; sensations as if dazzled; delirium; moderate diarrhoea; and somnolency increasing gradually until death, on *twentieth day*. Elliptical patches of the ileum, red, thickened, ulcerated; mesenteric glands, corresponding to them, of a bluish color, but little softened; three small ulcerations in the rectum, with a small submucous abscess; liver, friable, red and enlarged.

A FEMALE domestic, æt. 25, of a moderately strong constitution, was brought to the hospital of La Charité, May 11th, 1826. Had been at Paris one year, and had been ill eight days, the disease having commenced with pains in head, anorexia and cough. An emetic had been administered and leeches applied without any alleviation of symptoms.

She was drowsy during 11th, and on 12th, I found her in the following state.

Somnolency ; some stupor ; slight deafness ; buzzing in ears ; sensations as if eyes were dazzled ; intelligence, not clear ; no headache ; pains in limbs ; lips, pale ; tongue dry, red at tip ; great thirst ; anorexia ; abdomen, meteorised, not pained by pressure ; dejections of rare occurrence, but the patient was able to go to the close stool ; pulse, regular, at a hundred and two ; skin, rather hot ; cough, not frequent, but it caused pains in the abdomen ; respiration, but slightly accelerated ; mucous and hissing (sifflant) râle throughout left side of chest. Patient declared she had no pain, but that she was dying of weakness.

(Whey ; solut. de. sir. tart.)

Some involuntary dejections ; delirium and loud cries during the night. At hour of visit of 13th, appearance of sinking, but as on the previous day, the patient declared that she had no pain any where ; her tongue was dry and ruddy, and protruded with difficulty ; pulse, at a hundred and one. Blood from the venesection was neither buffed nor cupped.*

(Sinapisms to the lower extremities.)

The drowsiness was nearly constant ; the deglutition was somewhat difficult on the next day, and blisters were ordered for the legs.

16th. Face of a yellowish color ; more drowsiness ; stupor, more marked than day before ; the patient after answering a single question immediately fell into a drowsy state ; skin, moderately warm ; pulse, at a hundred and four, without any peculiar character.

* In the original there is no other notice than this taken of venesection having been ordered. — H. I. B.

No dejections during the day ; night calm. On 17th, features nearly natural ; countenance, fixed ; patient answered by gestures and words that she did not feel well ; the abdomen was very much meteorised, not painful on pressure ; voice, feeble. Some slight delirium at times during the day and night, and on the next morning her countenance was still more changed than before.

From that day until her death, on 23d, the drowsiness was constant except during a few intervals of active delirium. Face was pale and of a wild appearance on 20th ; nearly cadaverous on 21st ; and during this same day and the two following, the lower jaw had often spasmodic motions about it. The tongue was dry and brownish from 18th to 21st ; it trembled and was protruded with difficulty, during the last few days ; the dejections were involuntary and rather frequent ; the abdomen meteorised, and, as previously, not painful on pressure ; the pulse became gradually more feeble and quicker, so that on 20th, it was at a hundred and thirty ; skin, not hot, nor cough frequent.

At the hour of visit of 22d, the patient still noticed what took place about her ; there were spasmodic motions about the lips ; the pulse was regular ; respiration not stertorous, and at nine, A. M., one hour after the visit, she died.

Opening of the corpse twenty-two hours after death.

EXTERIOR. — Considerable stiffness of body ; nothing else remarkable.

HEAD. — Bones of the *cranium* twice as thick as usual ; six small opaque granulations in the *arachnoid* on each side of the *falx* ; no effusion under the membrane. A half spoonful of very clear serous fluid in each of the lateral *ventricles*. Sub-

stance of the *brain* of a good healthy consistence, very little injected.

NECK. — Small red spots not ulcerated upon the inferior face of the *epiglottis*; *larynx*, perfectly healthy; *trachea*, somewhat red at its lower part.

CHEST. — The *heart* was rather small, a little softened, but otherwise was healthy, as was likewise the *aorta*. The *right* lung had only two lobes, and united to the *pleura costalis* by some cellular adhesions. Its lower lobe, like that of the left, was posteriorly of a blackish hue to the depth of an inch and a half; and the part was hard, heavy, and sunk in water; it had not a granulated aspect, and on pressure a small quantity of red fluid, containing no air, flowed from it. Another part of the same lobes was softened, and in the first stage of inflammation. Anteriorly there was nothing very remarkable about either of them.

ABDOMEN. — The *œsophagus* was healthy. The *stomach* was of a medium size, and contained a moderate quantity of reddish liquid. Its mucous membrane was yellow in its great cul-de-sac, except near the *cardia*, where, for the space of about five inches, were numerous vivid red points; it was greyish over its upper face, but of a grey color mixed with red in the opposite portion; it was somewhat softened in the great cul-de-sac and along the great curvature; was of its usual consistence and thickness every where else. The mucous membrane of the *duodenum* was a little softened. The *small intestine* was of considerable size and contained a moderate quantity of bile. Its mucous membrane was of a yellowish green color through its whole extent; thin, somewhat softened in its first half; much more so in its second, and giving in the last three feet of the canal strips of one line only. In the last part were eight *ulcerations*, situated opposite the mesentery.

These ulcerations were somewhat indented, were from one half of an inch to two inches large, and the muscular coat had been laid bare by them. Their edges rough, elevated, more or less thick, were composed of the mucous and submucous coats, equally red, and both about one half of a millimeter thick. In the intervals between these ulcers were nine others which were much smaller, rounded, from two to three lines in diameter, but otherwise similar to the former. The *large intestine* was moderately distended, and contained much pul-taceous fæcal matter. Its mucous membrane was of a yellowish green color ; of a healthy consistence and thickness. Immediately above the anus were three ulcers about as large as ten-cent pieces, with flattened edges. The cellular membrane had been laid bare by them, and one of them communicated with a small submucous abscess about the size of a pea. The *mesenteric glands* were of a bluish grey color, somewhat enlarged and moderately softened. The *liver* was a little friable, somewhat redder and larger than natural ; the bile of the *gall-bladder*, ruddy, very liquid and very abundant ; the *spleen* was four times as large as usual, of a deep bluish color, half as firm as usual ; the other *viscera* were healthy, except that the left *ovary* was of a bluish red internally.

The small submucous abscess near the anus communicated with an equally small ulcer near it, and it may be asked if this ulcer and the other two near it did not have a similar origin, or did not commence with submucous abscesses. However this may be, this small abscess is the only one I have ever seen in the disease we are studying, and I am quite astonished, that I never have met with any in the elliptical patches of the ileum, because of the evidently inflammatory nature of their affection.

The mucous membrane of the small intestine was more or less softened throughout ; and if the ulcerations were neither very numerous nor very large, they were deep, so that notwithstanding our ignorance as to the symptoms previous to the entrance of the patient, it would be difficult to doubt that the seat of the disease was originally confined to these patches ; that to their morbid change must be referred the first symptoms, and that the disease pursued the same course which we have seen it follow in the preceding observations.

The state of the mesenteric glands is worthy of notice, as not corresponding with that of the patches near which they were. In fact, their size and softening were small, and their color similar to that which we observe in glands, in which the disease has taken a retrograde course, although there was nothing in the patches indicating that such was the fact. This case is likewise the only one in which I have not found a perfect accordance existing between the morbid changes of both.

The softening of the mucous membrane of the stomach, its greyish and reddish hue were doubtless the results of a degree of inflammation which was declining at the time of death.* The softening and friability of the liver, the increase of its size and intensity of color, were probably the effect of inflammation, or, at least, of a grave affection, if we do not consider their inflammatory nature fairly proved.

Not any one of these lesions had arrived at its *maximum*, and the softening of the mucous membrane of the small intestine, the gravest of all, might have been worse. However, if to this, which was found through the whole length of the in-

* See what I have said upon pages 157, 167 and 168, in reference to this grey color. — LOUIS.

testine, we add those of the stomach, liver, lungs, likewise the meteorism, we shall have sufficient cause for death in the apparent condition of the organs.

Notwithstanding the long continuance of the cerebral symptoms, the brain was healthy. This is what we have before remarked, as more than once, likewise, we have remarked the contrary of this to be true.

We should remark also that the change in the mucous membrane of the colon was very slight, and therefore the diarrhoea can hardly be attributed to any thing except the state of the mucous membrane of the small intestine.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

1st. Out of sixty-eight patients, among whom I do not reckon two individuals, in whom there was much emphysema of the cellular membrane, three had the large intestine more or less distended with gases, and in not one of them was the *volume* equal to that of the same intestine, as seen after typhoidal affections, when the meteorism was great. These patients died of pleurisy, pneumonia, erysipelas of the extremities, and an affection to which I could give no name. The mucous membrane was not ulcerated in a single case; it was much softened only in two.

The consideration of the size of the large intestine, which would seem at first sight of no importance, is, on the contrary, of great interest, since sometimes its extreme degree and frequency form, as it were, one of the secondary anatomical characteristics of the typhoid affection, and since in those cases in which the meteorism is very much marked, we may be able, at the first glance, to distinguish the corpse of a person who had died of this disease from that of one who had died of any other acute disease.

2d. The *fæces* had a healthy degree of consistence throughout, or nearly throughout the whole length of the canal, in twenty-two cases. They were either scattered here and there in small lumps, or collected together in larger or smaller masses. The mucous membrane was softened in various degrees and extent in many cases, without reference to the consistence or form of the *fæces*, and it had its healthy firmness only in one half of the patients. This confirms what I have stated in another work,* in relation to patients who die of chronic diseases, viz. that the consistence of the *fæces* does not give us any knowledge of the mucous membrane of the colon. I would remark, however, that the softening of this membrane was only very rarely accompanied, in these cases, by a slight change of color, sometimes greyish, sometimes of a pale onion-peel color; so that if moulded *fæces* do not prove the membrane to be in a healthy degree of consistence, at least it shows that it is not red, or in an evidently inflammatory state. The thickening was not connected with softening, save in one of these cases.

These facts are not unimportant, and it appears to me they tend to support the opinion previously given in relation to the non-inflammatory nature of the softening of the mucous membrane of the alimentary canal, in a certain number of cases. How can we conceive of an organ being inflamed without some alteration of secretion in a considerable number of cases, and of its being able to support so easily the contact of hard materials sometimes during a considerable space of time?

In other cases, the *fæces* were pultaceous, more or less liquid throughout the whole length of the intestine, of a yellowish or greenish color, if we except three patients in whom

* See my "Researches upon Phthisis." — LOUIS.

was found rather a large quantity of red fluid, instead of *feces* throughout the whole length of the canal, or only through one half of it. The first was a woman who died of a subacute inflammation of the womb, in whom the mucous membrane of the colon was granulated and softened; the second, an apoplectic man who died forty-eight hours after the attack, in whom the mucous membrane was red, but of a consistence little less than natural; the third, was a man who died of pneumonia on the twenty-third day of attack. In this last the mucous membrane of the colon was of a pale red color, thickened in some points, extremely softened throughout, mamelonated, or as it were, granulated over a considerable space, and in contact with a moderate quantity of a puriform fluid, slightly colored red. This I have never found in any case of typhoid fever; neither have I ever found in this disease a similar state of this membrane.

3d. With respect to *color* this membrane was white in thirty-two out of sixty-seven individuals of whom I took notes, or in a little less than half; it was of its usual consistence and thickness in sixteen of these cases; so that it was perfectly healthy in a little less than a quarter of the patients only.

In thirty-five cases in which its color was somewhat altered, it was either red or greyish, or of the color of onion-peel, as follows.

The redness was continuous or in larger or smaller patches. I found this last variety in eight patients, five of whom died of pneumonia;* the other in fifteen, to wit, through the whole extent of the intestine in three individuals, two of whom had died of pneumonia, one on the twenty-third, the other, the

* The cases of pneumonia form half of those, in which the color of the mucous membrane of the colon was noted — *LOTIS*.

twenty-sixth day of disease ; in the first or second half of the intestine in four ; in the rectum or cæcum, in eight.

The *rose* color was found in five cases, in three of which death was caused by pneumonia.

The *grey* color, whether pale or of a dark tint, continuous or in bands of different widths, and alternating at times with the red, was seen in the other cases, somewhat more frequently among those who died of pneumonia than among those who died of other acute diseases.

4th. The *consistence* of the mucous membrane was natural throughout, in twenty-two out of the sixty-nine in whom it was observed, or in about a third part of the cases. It was somewhat diminished in the others through the whole or only a part of its extent. The softening was universal, in twenty-two patients ; limited to the first half of the intestine, in eight cases ; to the second, in four ; to the cæcum, or very nearly so, in six ; to the rectum, in two ; to that part and the cæcum, in one ; and in one to the transverse colon. So that the softening, like the redness, was more marked in the cæcum than any where else.

The general softening was considerable in half the cases in which it was found, so that the mucous membrane had no longer a consistence greater than mucus. And, with a single exception, all the patients who had softening to this degree died after the twenty-third day of disease. In those cases in which the general softening was less, still it was very marked in a small part of the canal.

The partial softening was generally much less than the preceding, being considerable only in a third part of the cases.

It is important, moreover, to remark that the softening, especially the general softening, which is observed a little

more frequently among pneumonic patients than among those who died of other acute diseases, was generally much more marked in the former, the mucous membrane having the consistence of mucus merely in two thirds of the cases. We must observe this difference, because we shall see hereafter when studying the symptoms, that it corresponds very exactly with that of the diarrhœa in the various classes of patients who are cured.

It has been, doubtless, observed how much greater in number the cases of general softening were, than those in which there was a not less extensive redness; the former being twenty-two in number, the latter, three only. Thickening was found connected with softening in five cases only, among which were those in which there was universal redness. These facts, connected with those previously given, do not appear to me to leave any doubt in relation to what has been previously stated, as to the impossibility of believing that softening of the mucous membrane is always the effect of inflammation; otherwise it would be necessary to admit that this phenomenon, which displays all its characters almost uniformly in the elliptical patches of the ileum, presents only one of them throughout the rest of the mucous membrane of the intestinal canal, in the majority of the cases, and this seems to me to be impossible.

Some *crypts* of a lenticular form, few in number and similar to those I observed in cases of the typhoid disease, were found in eight of the present cases, in various proportions, but generally in those who had some in the small intestine. The three individuals who died in consequence of, or during scarlatina, were examples of this fact.

6th. Except in one case of dysentery, in which the colon had many *ulcers* in it, ulceration was found in three cases only

in all of which the patients died of pneumonia. In one, the mucous membrane was not wholly destroyed, but was extremely thin, and unequally so in the cæcum, over a spot four inches large, the sole part of the large intestine which was altered in the least. There was among the others one *single* ulceration, from two to three lines in diameter, having smooth, flat edges, and the cellular membrane exposed by it, near the end of the rectum, or at the place of junction of the transverse and descending colons. Thus we see that the morbid changes of the mucous membrane of the large intestine, common to those who have died of pneumonia, and those who died of other acute diseases, were of a more serious character and of more frequent occurrence among the first than the second, and that ulcerations, except in one case of dysentery, were found only in those who died of pneumonia.

Thus, excepting the hard patches, the morbid alterations in the large intestine were the same in patients dying of the typhoid affection, and those who died of any other acute disease; and the difference of proportion was considerable only with reference to the meteorism and the ulcerations of the mucous membrane, so that

Out of 45 of the former	Out of 69 of the latter
the mucous membrane was	the mucous membrane was
generally red in . . . 3	generally red in . . . 3
partially red in . . . 10	partially red in . . . 12
greyish in . . . 9	greyish in . . . 7
generally softened in . . . 16	generally softened in . . . 22
partially softened in . . . 14	partially softened in . . . 25

Not only the softening, the gravest of the lesions of the mucous membrane, was not more frequent in those who died of the typhoid affection than among those who died of other dis-

eases, but, as we have seen, it was, *ceteris paribus*, oftener found very severe in the latter than the former. This is an important fact, inasmuch as the diarrhoea being more frequent and more severe in individuals who died of typhus than in those who died of other diseases, it seems natural to conclude that the seat of the diarrhoea among the feverish, (if I may be allowed the expression), was not the large intestine; that the diseases of this canal were not primitive, but arose at a period more or less remote, from the beginning of the disease, as in other diseases in which the fact is evident; perhaps even in some cases these morbid changes began at a still more distant period, since, as we have remarked above, the softening was generally less important when consequent upon typhoid fevers than after other affections. Thus it is that facts confirm facts, and when one conclusion has been rigorously deduced, every circumstance which can be referred to it, is a new proof of the truth of it.

It is scarcely necessary to remark, that the lesions of the mucous membrane of the large intestine, excepting those of the patches, being common to patients who died of any acute diseases, whether of a typhoid character or otherwise, cannot be considered as characterizing either one or the other of these classes, and they merely confirm what has been previously said in relation to the influence exerted by these different affections, of whatever character they may be, in producing morbid changes in the mucous membrane of the alimentary canal. And likewise, what I have said in relation to the much more frequent occurrence of these lesions, after pneumonia than after other diseases, proves that the frequency and intensity of these secondary lesions depend upon the violence of the febrile symptoms.

Although the hard patches are found in a fourteenth part

only of the cases of typhoid fever, and consequently cannot be considered as essential to typhus, as has been remarked in relation to the ulcerations of the œsophagus and pharynx, it is, nevertheless, evident that they are of great value, since as they appear to be peculiar to typhoid fever, they would be sufficient to enable us to recognise the affection at the first glance.

The meteorism and ulcerations of the large intestine are not less important than the hard patches, as has been shown previously, because of their frequency after typhoid affections, and extreme infrequency after other diseases ; and we have seen that, at a certain degree, the distention of the colon appears characteristic of the typhoid affection.

CHAPTER II.

LYMPHATIC GLANDS.

Glands of the mesocolon, liver ; glands along the large and small curvatures of the stomach ; lumbar, inguinal, cervical and axillary glands.

ARTICLE I.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

SEC. I. — Mesenteric Glands.

THEY were more or less seriously altered in size, color and consistence in all the patients, in those parts which corresponded to the elliptical patches, whether these last were ulcerated or merely red and softened. As we have already seen with relation to the patches, they were more severely diseased according to their proximity to the cæcum, and as there were often remarkable differences in their aspect, accord-

ing to the period at which the patient died, we must study them at these various periods.

1st. In those persons who died between the eighth and fifteenth days of the disease, their size was considerably increased; it equalled, and sometimes was greater than a hazelnut in some very near the cæcum. They were of a pale rose color, sometimes streaked with dark red within, and very much softened so that the largest, which were likewise the most softened, were easily crushed by the slightest compression of the fingers. Instead of the rose color, they had a very dark red hue near the cæcum; in two out of the ten subjects of the series.

2d. In patients who died between the fifteenth and twentieth days of disease, their size and softening were at least as great as in the preceding cases, their color, sometimes of a rosy hue, sometimes brown red; and in three cases many of them, in the neighborhood of the cæcum had a greater or less number of yellow points in their substances. (Obs. 1, 6, 46). These points, although doubtless they were purulent, had not the least appearance of fluidity, but were very much as we see them in commencing abscesses of the liver.*

The condition of the mesenteric glands therefore, in these two groups of patients, was in exact relation with the condition of elliptical patches of the ileum, so that in those cases in which the patches were but slightly, or not at all ulcerated, these glands contained no pus; and when the ulceration was more marked, the disease of older date, pus began to appear and absolutely existed in many cases.

3d. In patients who died between the twentieth and thirtieth days, I observed as follows.

* See my "Memoir upon Abscess of the Liver." — LOUIS.

The mesenteric glands were of a rose color near the cæcum in two cases ; of a violet red hue, more or less marked at the same part in the others ; and nearly all the glands composing the patches which were but a *little altered* had the rose color which I have described as existing in the patients of the first group. In some, instead of the more or less deep amaranthine red color which they had generally, the glands were greyish, bluish or purplish ; somewhat smaller and softer than in the other cases in which their size and softening were as great as in the individuals of the preceding groups. (Obs. 2, 36, 39). This state also was in harmony with that of the elliptical patches, whether ulcerated or not, which in the same cases had a similar hue, and were rather less softened than the red patches. And as these different degrees of change of color, of consistence and thickness depend upon the return of the patches towards a healthy state, we cannot doubt that the bluish, or purplish color of the glands, their volume, and their rather smaller degree of softening depended upon the same cause.

In some subjects the glands contained pus in rather larger points than in the preceding series, or it was collected in small cavities (Obs. 2, 3, 24, 32, 36), so that in certain cases we can determine the period at which death took place, by means of the mesenteric glands.

In the patients of this series, I met only one case in which the morbid change of the elliptical patches and that of the mesenteric glands were not in perfect harmony. (Obs. 22).

4th. In some patients who died after the thirtieth day of disease, the violet, greyish or bluish color predominated ; so that in two of them only were the glands of a vivid red color, and these patients died in consequence of perforation of the small intestine. As a change of color had taken place, so the

size and especially the softening of the glands were much less than in individuals who died during the preceding period, and this was in perfect accordance with the state of the patches, whose retrograde march was, as we have previously seen, much more advanced than in the others. And if this simple examination does not convince the reader that the state of the mesenteric glands was, as that of the patches, the effect of a retrograde course in the disease; that they had been, at some previous time, softer and of a different color, he will be satisfied upon the point by considering that the glands, nearest the cæcum, contained in two cases small collections of pus. Thus the lesion was not merely the same as in the preceding series, but it followed the same course, having been more severe near the end of the ileum than any where else.

At a future period, in the next volume, I shall give the cases of the typhoid affection, about which there may be some doubt at the first glance, and I shall likewise give the case of a patient who died on the forty-ninth day of disease, in whom there was a mesenteric gland almost wholly converted into pus, and the cavity had such very thin walls, that inevitably it would have opened into the cavity of the abdomen, had the patient died a few days later.

The mesenteric glands we have just been speaking of, were not the only ones which were altered; those which corresponded to the *healthy* elliptical patches were also diseased in rather a large number of cases; or in ten out of forty-six patients, to wit;

In 1 subject out of 10 of the first series,					
2	"	"	7	"	second "
6	"	"	20	"	third "
1	"	"	9	"	fourth "

But this morbid change was much less than the other, being only a greater or less increase in volume, and a more or less vivid red color, without evident diminution of consistence.

Instead of being red these glands had a bluish or greyish aspect, in one case in which the disease went its course very slowly, and this circumstance would tend to make us believe, if we remember the facts given previously, that the red color had existed before at a certain period of the disease, but that it had retrograded afterwards.

If the state of the mesenteric glands, corresponding to the diseased elliptical patches, was the evident consequence of the disease of the latter, it may be asked what was the cause of morbid changes in the glands we are now speaking of.

Although their slight affection was invariably the same, (except in one case with regard to color), the cause of it was perhaps not constant. Let us see what I observed with respect to this subject. Out of ten in whom I observed it, in four the mucous membrane of the small intestine was perfectly healthy ; in the six others, it was more or less softened ; and in some of them it was evidently inflamed. In the first four cases, the state of the mesenteric glands could not be attributed to some alteration of the mucous membrane corresponding to them, which it was not possible to discover at the autopsy. And with respect to the others, it is difficult to decide, inasmuch as if we cannot deny that the state of the mucous membrane had some influence upon that of the glands, we likewise cannot be certain that such was the fact, because a state entirely similar was observed when this membrane was perfectly healthy. But in whatever manner we explain these last six cases, it is certain that the increased size and the rose color of the glands could be attributed simply to that cause only

which produces so many other secondary lesions, and which has been spoken of several times in reference to those of the mucous membrane of the stomach and intestines.

§EC. 2. — Mesocolic Glands.

The doubt in which one remains with reference to the influence, which the change in the mucous membrane of the *jejunum* may have upon the mesenteric glands which correspond to it, is experienced again, to a certain extent, with reference to those of the mesocolon. Let us examine what I have observed, in a small number of patients it is true, (nineteen) in whom I studied the state of these glands.

1st. They were more or less enlarged, about the size of a pea, or a little less, in five out of the patients who died between the eighth and fifteenth days of disease, the only cases of this series which I examined; they were of a rose color in two others; of a more or less deep red in two more, one of whom was a person who died on the eighth day of the disease (Obs. 11); they were very much softened in two individuals who died on the eighth and twelfth days of the affection. The consistence was not mentioned in the others.

The large intestine had in three of these cases some hard patches, some of which were ulcerated, others not so; or numerous, red crypts, ulcerated at their summits. (Obs. 11, 12, 38). In a fourth its mucous membrane was simply very much thickened and softened throughout its whole extent, and red in a great many points. (Obs. 20.) It was perfectly healthy in color, consistence and thickness in the fifth in whom the mesocolic glands were as enlarged as they were friable. (Obs. 13). Therefore in this case the mucous membrane had no influence upon the morbid condition of the glands. And as the morbid state was not less marked in this case than in the

others, it is very difficult to decide upon its cause in these last, although in regard to three of the patients in whom we found either hard patches or ulcerations, it was impossible to doubt that these lesions had had some influence in producing the disorder.

2d. The size of the glands of the mesocolon was, at least, three times as large as usual; their color was a dark red in two cases of the second series in which I examined them. (Obs. 1, 62).

There probably was inflammation of the mucous membrane in both cases, and in one there were also two small ulcerations in the cæcum and right colon.

3d. Out of eight patients who died between the twentieth and thirtieth days of disease, and in whom I examined the glands of the mesocolon, two had them small, greyish or bluish, without any evident alteration of consistence and thickness. (Obs. 32, 37). They were more or less enlarged in the others, and of a dark red color, except in two cases in which the color was of a rose hue or greyish blue, similar to that of the mesenteric glands and of the elliptical patches which corresponded to them, in the same patient. (Obs. 29).

In four of those whose glands were red and enlarged, the colon had hard patches or ulcerations, or its mucous membrane was simply more or less inflamed, and these lesions must have exercised a greater or less influence upon the morbid change found in the mesenteric [mesocolic?] glands. But the mucous membrane was perfectly healthy, excepting slight enlargement of some flattened crypts, in another patient in whom the glands of the mesocolon were not less enlarged than in the preceding cases. (Obs. 25.) Such was the case also in another patient, except that there was a certain degree of thickening, the probable cause of which was the meteorism.

It results from these two facts as well as from one observed in the first series, that the mesocolic glands, like the mesenteric, may be the seat of severe inflammation without the mucous membrane, corresponding to them, being in the least diseased ; an inflammation, the cause of which must be sought for in the general re-action produced by the primitive affection.

The mucous membrane of the large intestine had many ulcerations in it, in one of the two cases in which the glands of the mesocolon were healthy (Obs. 32) ; it had nothing remarkable about it in another case.

4th. The glands of the mesocolon were natural in one of the subjects of the fourth series ; they were small and bluish in another (Obs. 16) ; they were rather large, blackish and of good consistence in a third, the last of those in whom I examined them. (Obs. 15).

The mucous membrane of the large intestine was very seriously diseased, and had many ulcerations in this last case ; it was healthy in the others.

Thus the mesocolic glands had undergone a greater or less change in size, consistence and color, in fourteen out of eighteen [nineteen?] patients in whom I examined them ; this marked change was evidently inflammatory ; and whatever was its cause, its course was rapid, in proof of which I would cite those cases in which these glands were of a rose color, enlarged and very friable in a patient who died on the eighth day of the disease, and in whom the mucous membrane of the colon was perfectly healthy. This change of structure probably commenced early likewise in other cases in which death supervened at a much later period ; and according to this supposition we must not be surprised that the mesocolic glands, like those of the mesentery, should have undergone changes similar to those of the latter in color and volume ;

that their color was bluish and their size less in patients who died at a distant period from the commencement, than in those who died earlier. But these glands had one peculiarity about them, to wit, whilst the mesenteric glands at times contained pus, these never contained any ; which we can hardly conceive of except by supposing that the inflammatory affection was less severe, and generally was slower in its progress in these last than in the others.

SEC. 3. — Lymphatic Glands, situated around the bile-ducts.

I found them more or less enlarged, red and softened in two cases only. One case was in a patient who died on the twenty-second day of the disease ; they were quite numerous in the following case.

TWENTY-THIRD OBSERVATION.

Little or no diarrhœa ; no meteorism ; somnolency ; delirium ; some spasms ; death on *fourteenth day*. Many elliptical patches, red, slightly ulcerated ; solitary crypts, red, numerous, and at a very short distance apart ; ulcerations of the stomach ; one ulceration in the bladder ; lymphatic glands, enlarged and softened in parts about biliary ducts ; idem, in the second half of the mesentery.

A MASON, æt. 29, of a moderately strong constitution, fell ill November, 19th, 1825, and was brought to the hospital of La Charité on 28th of the same month. He had been able to walk there, and seemed to have perfect command of his reason when he arrived, saying that he had been at Paris four months and had been ill ten days, that he had been bled, and needed still another venesection on account of his severe head-

ache. He was delirious all night, and the next day I found him in the following state.

Somnolency, nearly constant; slight stupor; face had a puffed appearance, and was slightly flushed about cheek-bones; at times, strabismus; mind, not clear; remembered nothing; answers, slowly given and nearly unintelligible; tongue, natural at tip, white at back part, protruded scarcely beyond the teeth; anorexia; thirst; abdomen, of natural shape, not painful on pressure, except in the right iliac fossa; one liquid dejection; skin, very hot and dry; pulse, rapid, sunken; respiration, somewhat accelerated; no cough. No kind of eruption upon skin, neither rose spots nor sudamina.

(Orge. sir. tart. twice; twenty leeches to ears; sinapisms to lower extremities.)

Shortly after the visit, patient was very restless, so that attendants were obliged to restrain him by means of the straight jacket. In consequence of having no leeches, venesection to fourteen ounces was performed, and the blood became covered with a greenish and greyish semi-transparent buff. Patient did nothing but utter loud cries during the night, and was continually calling his dogs. (He had been shepherd before coming to Paris). On 30th, somnolency; face, rather pale than red; speech, more unintelligible than before; we could understand, however, that the patient wished for some wine, and thought it would do him no harm. Pulse, regular, thread-like, at a hundred and thirty-six; the other symptoms as on 29th.

(Blisters to legs; sinapisms, as before).

The drowsiness was constant during the day and night. Dec. 1st, it continued, the eyelids were firmly and permanently closed, in consequence of the spasmodic action of the muscles. It was the same with the orbicular muscle of the

mouth, of which there was many distortions. The limbs, at times, were convulsed ; the pulse, very much accelerated and very small ; abdomen, much meteorised.

(Forty leeches about ears.)

Again there were no leeches in the hospital, and no other sanguine evacuation was made. At morning visit of 2d, profound drowsiness, which it was impossible to overcome ; appearance of disgust rather than of suffering ; at times, trembling of lower jaw ; deglutition, difficult ; urine, involuntary ; no dejection. At ten, A. M. face, covered with perspiration ; frequent motion of limbs ; respiration, strong and noisy, and at four, P. M. the patient died, having had previously, during a considerable length of time, foam about his mouth.

Opening of the corpse forty hours after death.

EXTERIOR. — Nothing remarkable ; muscles not sticky, of firm texture.

HEAD. — Some white, opaque granulations clustered together on posterior part of *arachnoid*, near longitudinal fissure. Some traces of effusion under the arachnoid. Two small spoonfuls of very clear serous fluid, in each one of the lateral *ventricles* ; a spoonful of the same fluid at the base of the brain. *Pia mater*, perfectly healthy ; *cortical* substance of the brain, slightly shaded with red ; the *medullary* was rather injected. Otherwise both were perfectly healthy.

CHEST. — No effusion into the *pericardium*, the interior of which, on the contrary, had a very dry appearance. *Heart*, of good dimensions ; its right ventricle was rather soft. The *aorta* was red throughout, and its different coats were healthy with respect to consistence and color. *Pleurae*, healthy ; no effusion into them. *Lungs*, without adhesions. Their upper

lobes were of a bright red color throughout, elastic, much firmer than usual, and dry ; their lower lobes were of a dark red, less elastic and firmer than the upper ones, and on pressure, a moderate quantity of blood flowed from them. Nothing else remarkable.

ABDOMEN. — The *œsophagus* was deprived of its epidermis, but was otherwise healthy. *Stomach*, small. Its internal membrane was of a yellowish color, and broke rather easily when strips of it were raised in the great cul-de-sac ; it was greyish without being thickened, and of a good consistence elsewhere ; it was mamelonated along the great curvature over a space of from eight or nine inches, and this part was covered with mucus. In this part and a little beyond, towards the upper part of organ, were twenty-five small ulcerations, most of which appeared like incisions made by a lancet, and whose edges remained somewhat separated from each other. The *duodenum* was greyish, but was otherwise natural. The *small intestine* contained a moderate quantity of mucus in its first half, a thin stratum of blackish or brownish fluid in the second, and in different parts were six lumbrici. Its mucous membrane was thin, pale, or of a very pale shade of red in the jejunum ; it was of a good consistence in its first half, very slightly softened afterwards. Twenty *elliptical patches* were scattered throughout nearly the whole extent of the ileum, which were more or less red, prominent about a line above the adjacent parts ; they were very much softened, so that the mucous membrane, of which they were chiefly composed, could not be raised in strips ; they were larger and nearer one another, according to their proximity to the cæcum, near which three of them were a little ulcerated, and were more than two inches in their greatest diameter. Their subjacent cellular tissue was more or less reddened and thickened ; the muscular

was perfectly healthy. In the intervals between these patches, and through the whole length of the ileum, was a great number of small rounded elevations (*saillies*) of the same color, which, like the patches, were more numerous and nearer one another, according to their proximity to the ileo-cæcal valve ; so that from being, as at first, about the size of a millet-seed merely, they became as large as a hemp-seed, and some even were two lines in diameter ; in the two feet nearest the valve they were distant from each other only one or two lines ; they were not ulcerated, were without any sensible orifice, and were as thick as the patches. The *large intestine* contained a moderate quantity of pultaceous fæcal matter in the cæcum, which took the form of the intestinal canal afterwards. Its mucous membrane was a little softened in the first point, was of proper consistence and thickness afterwards. The *mesenteric glands* were of a pale rose color ; their consistence was very much diminished ; their size increased regularly from the middle part of the mesentery to the part corresponding to the cæcum, near which many were of the size of a small nut. The *liver* was pale, moderately softened, and of a proper size. The *gall-bladder* contained an abundant quantity of colorless, aqueous, transparent fluid, and its internal membrane was healthy. The common and cystic ducts were surrounded with small lymphatic glands of the size of small nuts, which were softened, and of the same color as those of the mesentery, and internally the cystic was colored yellow over a space of a half-inch only from its point of union with the hepatic ; it was, moreover, perfectly healthy. The *spleen* was of a bluish black color ; was rather larger than natural, and of good consistence. The mucous membrane of the pelves of the kidneys was somewhat thickened and very much injected ; that of the

bladder, save some red patches and a small ulceration in the neighborhood of meatus urinarius, was healthy.

This observation presents many points of interest, especially in regard to the appearances presented at the autopsy. The glands, surrounding the cystic and hepatic ducts were of a pale rose color, very much softened and enlarged; they had strongly compressed the former, so as to prevent the passage of bile into the gall-bladder, which contained merely a white fluid, which was very thin and diaphanous. This liquid, which it would have been important to have analyzed, was not the result of any morbid secretion, the mucous membrane of the bladder being healthy, and could not have had any other source than the bile itself, whose coloring matter, and, doubtless, other elements had been absorbed. Moreover, the hepatic duct, notwithstanding the glands which surrounded it, was still traversed by the bile, and I regret that I did not examine with care the degree of compression exerted by these glands upon it and the cystic; consequently I cannot say whether this latter became impermeable because it was more compressed, or because the passage of the bile through it, being naturally more difficult, could therefore become entirely prevented more easily than in the hepatic duct.

What was the cause of the violent inflammation observed in these glands? We did not find any in the gall-bladder, in which there was no appreciable lesion, nor in the liver, the softening of which organ never produces such a result; and without denying absolutely that it may have existed in the surrounding organs, it seems to me much more probable that there was no other cause than that which produces so many secondary lesions.

The elliptical patches of the ileum had nothing specially dif-

ferent from what we have remarked in them in previous cases, and therefore do not need any special notice at this time. But this is not the case with the numerous, red, rather enlarged granulations which were found in the intervening spaces between the patches. Were these granulations crypts? If their form would lead us to this opinion, we must confess it is the only circumstance at all favorable to this idea. For, upon this supposition, why did it happen that, of these many crypts of all sizes, of every state of disease, even ulcerated, not a single one had an orifice of any size, as is seen rather often upon the elliptical patches of the ileum which are farthest from the cæcum?

In consequence of not having any account of the state of this patient's health previously to his admission into the hospital, we cannot assert positively that the limited mamelonated state of the mucous membrane of the stomach was of recent date; but I would remark that the small ulcerations of this organ were confined almost entirely to that part which was mamelonated, and as these ulcers were the more or less direct consequences of inflammation, they would seem to indicate that the mamelonated state was likewise a consequence of an inflammatory cause.

The almost perfectly healthy state of mucous membrane of the large intestine reminds us of what has been already said, when analyzing the various lesions of which it is frequently the seat, viz.; that these lesions are not essential to the affection, since they are absent in more than one case, &c. Without laying much stress upon the state of the pelves of the kidneys, the mucous membrane of which appeared inflamed, I would remark that the bladder had one slight ulceration, and it was the only one I met in all the patients we are now examining.

SEC. 5. — Lymphatic glands of the Stomach.

I noted the state of the glands found along the two curves of the stomach, in five patients. They were enlarged, and of a violet red color, in the course of the small curve, in two cases ; not less enlarged, red and greyish, in two others ; natural, in the fifth.

The mucous membrane of the stomach was softened and of diminished thickness in bands (Obs. 36), or merely softened and red in the great cul-de-sac, in the first two ; mamelonated and generally softened, in the third (Obs. 7) ; without evident alteration, in the fourth (Obs. 30) ; thinned and softened in bands in the fifth case in which the glands had nothing remarkable about them. (Obs. 23).

Thus, on one hand the lymphatic glands surrounding the stomach may remain perfectly healthy in cases, in which the mucous membrane of the stomach has undergone serious morbid changes ; and, on the other, they may be more or less red and enlarged, whilst this membrane retains an entirely healthy state ; that is to say, that the state of these glands is not necessarily in any way connected with that of the mucous membrane of the stomach, that these two sets of organs may have each its peculiar morbid changes independently of the other, and, doubtless, according to the same laws. This confirms what has been previously stated in regard to the lymphatic glands of other regions.

It follows, moreover, as one of the immediate consequences of this fact, that the state of these ganglions cannot throw much light upon the nature of the lesions of the mucous membrane of the stomach, the character of which is still doubtful ; and we should expose ourselves to very grave errors, if we should infer that inflammation had existed in the mucous membrane of the stomach, merely because it had existed in the glands

about this organ. I regret, nevertheless, that want of facts prevents me from making more important researches into a subject so interesting; but I would remark that my notes could not have been so often wanting in detail in relation to this point, except from the fact that these glands are generally in a natural state, as their increase in size could not have escaped my observation, had it been considerable, in consequence of the method I followed in examining the stomach. I was accustomed to remove it from the organs connected with it, four or five inches from its two orifices; I opened it along the course of the great curve; I then examined in every direction; I spent a long time in studying its mucous membrane. How, therefore, would it have been possible not to have remarked any enlargement of these glands, even a slight one, had it existed in any cases?

SEC. 5. — Lumbar and Inguinal Glands.

The lumbar glands were enlarged and of a firmer texture than usual in two patients, one of whom died of a phlegmonous erysipelas of the lower extremities, which came on at an advanced period of the disease. In another case of the same kind, the inguinal glands, corresponding to the affected side, were red, enlarged, and one of them contained pus. The same pathological state, without pus, existed in three other patients, all of whom had blisters applied to legs.

SEC. 6. — Cervical and Axillary Glands.

Out of twelve subjects, in whom the cervical glands were properly examined, in nine they were more or less red and enlarged, without being sensibly softened. There was nothing remarkable about them in three others, who died after the thirtieth day of disease.

Six out of the first nine had ulcerations in the pharynx, or the epiglottis was partially destroyed, and one might suppose the state of the cervical glands to have been owing to these lesions, but the mucous membrane of the pharynx and air passages was perfectly healthy in one of the three other subjects, it was somewhat red merely in the two others ; so that there is no other explanation to give of the lesion of the glands in these three cases than that given for other analogous lesions of the same organs in other regions and in similar circumstances ; that is, when the mucous membrane, corresponding to them, is not sensibly altered in structure.

I would make the same remark, moreover, in relation to the small number of facts I have given in treating of the cervical glands, that I did about those of the stomach, viz. that if they had been more frequently enlarged, the increase in their size could not have escaped me, inasmuch as, in order to examine the air passages, I was wont to remove the pharynx and tongue by an incision on each side of the neck.

I examined the axillary glands in one patient who had had a large ulceration on the right shoulder, in consequence of an eschar of the skin, and they were red and enlarged, very nearly equally so on both sides.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

1st. The *mesenteric* glands were red and enlarged, in six patients who died of small-pox, scarlatina, pneumonia, erysipelas of the lower extremities, and somewhat softened in one case of small-pox ; that is, in no one of these cases was there any alteration of these glands at all comparable with that which the second half of the mesentery presented after the typhoidal affection.

The mucous membrane of the small intestine was perfectly

healthy in a patient who died of pneumonia, it was more or less changed in structure, was red and softened, or merely softened in the five other patients.

2d. I have collected only a few facts in relation to the *mesocolic* glands, and, like the mesenteric, I found them healthy in cases where the mucous membrane seemed inflamed.

3d. The *cervical* glands were more or less red and enlarged in four patients, three of whom were affected with eruptive diseases. The mucous membrane of the air passages was altered evidently, in two cases only.

4th. In not a single patient did I find any disease of the glands around the *bile-ducts*.

These facts, although in some respects negative, are not less important when considered in themselves, or when compared with those relative to patients who have died of typhoid fever.

In the first view they concur in demonstrating that the lymphatic glands may be altered in structure, in consequence of the same laws which govern morbid changes in other parts of the body, and independently of the mucous membranes with which they may be connected ; that these last are frequently diseased while the glands remain healthy ; and this last fact cannot always be explained by attributing it to the late period at which the lesions commenced. For, if we examine the mucous membrane of the small intestine merely, we find it too often more or less seriously altered, softened, over too great a surface, for us to believe that this affection could have arisen in one or two days merely. Therefore we cannot make use of the state of the lymphatic glands to explain the still doubtful nature of some of the lesions of the membranes corresponding to these glands.

In a second point of view these facts show, 1st, that soft-

ening and increased size of the mesenteric glands to a remarkable degree are peculiar to patients dying of the typhoid affection; likewise, that, although these morbid changes are consequent upon that of the elliptical patches of the small intestine, they are not less, when found in the marked degree of which we are speaking, an anatomical characteristic almost as important as ulceration and inflammation of the patches themselves, inasmuch as they occur, like these patches, in all patients affected with typhus and with analogous changes, according to the period at which death happens to take place. 2d, We learn from these facts, that in different diseases, when the mucous membrane of the small intestine is in a similar state near the duodenum, where the patches present no special change, the mesenteric glands are much more often diseased, red, enlarged, and without evident softening in those patients who die of the typhoid affection than in those dying of other affections. Thus it appears that the typhoid disease seems to establish a marked predisposition to morbid changes in the mesenteric glands, but not merely in these, for those of other regions, particularly those of the neck and around the bile-ducts are similarly affected, these last having been changed in no other case of disease than the affection which it is the object of this work to elucidate.

CHAPTER III.

SPLEEN.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

THE spleen was not in a healthy state, except in four cases ; twice in patients who died between the twentieth and thirtieth days of disease, twice in those who died after this period.*

Its morbid changes consisted in alterations of volume, consistence and color, which I will now lay before the reader.

* In consequence of the great number of cases in which the spleen seemed to me to be diseased, one may be inclined to doubt as to the value of the results which I shall give in this chapter ; to ask, for example, if when the size of the spleen seemed to me somewhat greater than natural, its enlargement may not have been more apparent than real ; and if, in this respect, my deductions may not be less true than one would have thought previously. To these doubts I would answer that the size of the spleen is naturally very small, since percussion on the point of the chest corresponding to it gives us knowledge of it only in cases in which its size is incontestably augmented, as in intermittent fevers, and some cases of the typhoid affection, and since we cannot feel it through the parietes of the abdomen except under the same circumstances ; having, likewise, examined many subjects, who died suddenly and in an unexpected manner, without being able to decide upon the cause of death from the state of the organs, I always found the spleen very small ; that such was the fact in the great majority of those who died in consequence of an acute affection of the lungs or heart ; finally, I would remark that if the size of viscera diminishes generally in the course of chronic diseases, this is not the case during that of acute diseases. It is from these examples I have judged of the spleen, but as the size of this organ must, like others, present numerous varieties even when in a natural condition, I have reckoned among cases of increase of this size only those which appeared at least of double their usual dimensions. — LOUIS.

SEC. 1. — Size of the Spleen.

The spleen was three, four and five times as large as usual, in seventeen of the forty-six patients whose histories we study, so that often I found it eight inches long and proportionably broad. These cases were distributed in the following manner,

4	out of 10	patients of the first series,
3	" 7	" " second "
9	" 20	" " third "
1	" 9	" " fourth "

that is to say, the proportion of cases in which the size of the spleen was considerably increased was much greater in those who died before the thirtieth day than in those who died after that period, and very nearly the same in the first three groups of patients.

In the other cases if we except ten, the spleen was double its usual size, and in some was larger. In the ten cases which are excepted, the size was natural, or less than twice as large as usual. These cases were distributed as follows,

2	in 10	subjects of the first series,
5	in 6	" " third "
3	in 20	" " fourth "

Among the last was the single subject whose spleen seemed small, whilst in all those of the first group it was larger than usual, though not of double its usual size.

Thus the individuals who died after the thirtieth day were those in whom the size of the spleen was less frequently enlarged, and most frequently natural or nearly so.

SEC. 2. — Softening of the Spleen.

This softening existed in different degrees in three quarters of the cases, or in thirty-four patients; consequently not quite

so often as enlargement of the organ was found, and it was found throughout the whole of the organ.

When in its greatest degree the spleen, though not cut open, allowed the finger to penetrate its substance very readily, and its parenchyma was quickly reduced to a pulpy state. This extreme softening was found in seven individuals, of whom

1 was in the first series,
1 " " second "
5 " " third "

There was not a single example of this in those who died after the thirtieth day.

This softening was in a rather less severe degree, in seven patients, of whom

2 were in the first series,
1 " " second "
3 " " third "
1 " " fourth "

It was much less marked in other patients, especially in those who died at an advanced period of disease.

The spleen was natural in consistence in fourteen subjects, to wit,

1 out of 10 of the first series,
1 " 7 " second "
8 " 20 " third "
4 " 9 " fourth "

So that the size and consistence of this organ were much more frequently natural in patients who died after the thirtieth day of disease than in those who died earlier, and, in the single case among the former, in which its volume and softening were great, these lesions were found in their greatest degree.

But these two lesions were not always connected, or were found in different degrees in the same subject. Let us examine what I have observed in relation to this question.

In seven cases in which there was extreme softening, the size of the organ was increased in the same proportion. In those, where the softening was rather less, the size was somewhat enlarged in four out of seven ; and at a still less degree of softening, the spleen was three or four times as large as usual in four subjects. Finally, it had its usual size in four other cases in which its volume was four times as large as usual, these cases being those of patients who died between the twentieth and thirtieth days of disease.

It was, therefore, in patients who died earliest, that the combination of softening with increased size of the spleen was most frequently observed.

If now we remember that the spleen was not entirely healthy, that is to say, did not have its usual size and degree of consistence in any case in which death occurred between the eighth and twentieth days of disease, and that it appeared wholly free from morbid change in four only of those who died at a later period, we must conclude that morbid changes in this organ commence at a very early period, and *very probably*, they exist in all patients, those subjects in whom no alteration was observed being among those in whom the other lesions had commenced a retrograde course, and possibly that of the spleen may have done so, inasmuch as it would in some cases probably follow the same course as other lesions.

SEC. 3. — Color of the Spleen.

The color of the spleen was not less frequently altered than its consistence and volume ; but there was no constant relation existing between its different shades of color, and its

other affections, as the same color was found connected nearly equally with every different degree of volume and consistence, so the changes observed in the color of the organ, like those of many other organs, were the least constant and less essential of its morbid changes.

The color was much darker than natural in half of the cases ; of a very deep brownish blue, more marked internally than externally, in sixteen subjects ; of a dark red, or blackish, in which the bluish tint had disappeared more or less completely in eight others. These two shades existed in half of the patients who died between the eighth and fifteenth days of disease ; in rather a larger proportion, in those who died between the fifteenth and thirtieth ; and in three patients only among those who died after that period.

Although less dark than in those above-mentioned, yet the color of this organ was darker than in health in other individuals. It was natural or lighter colored than natural in nine subjects, in one of which the spleen was likewise much enlarged.

The color was uniform in all the cases throughout the organ with the exception of two cases ; in one of which it was red superficially to the depth of a little less than an inch, of a much darker color farther inwards. (Obs. 36.)

To what cause shall we attribute these different lesions we have now examined ? Considering merely the softening and increased size of the spleen, which were generally connected, one would be led to suppose that they were the product of inflammation, and this opinion might be strengthened by the recollection, that in some of those subjects, or in many who did not die, and whose histories I shall analyze, the spleen had been, in all probability, the seat of slight pains, which had been increased by pressure. But other facts, as it appears to

me, do not allow us to stop at this conclusion. On the one hand, we cannot attribute with certainty this pain to the parenchyma of the spleen, but, on the contrary, analogy would indicate that it was caused by the distention of its membranes; there being no reason for believing that its parenchyma has sensibilities which that of other organs does not seem commonly to have even in their most acute diseases, whilst those diseases do not attack the membranes covering them. On the other hand, the most marked characteristic of inflammation, pus, was found in not a single case. I have never, moreover, found it in any subject who died of any other acute disease, in which the spleen had morbid changes similar to those which we are now considering. How can we conceive that inflammation, which was so active that it produced, sooner or later, these changes in size and softening above described, should not have given rise, in a single case, to the formation of a quantity of pus?

Doubtless it will not be said, that as the spleen is very different from other organs, we can readily conceive that inflammatory phenomena may undergo some modifications in it, and that pus may not be the consequence of them; for in the parenchyma of the spleen are found a large number of lesions analogous to those found in other organs; the brain, likewise, whose structure differs more widely than that of the spleen from every other organ, is not less liable to the formation of pus; and, finally, a certain quantity of pus has been found at times, though but seldom, in the substance of the spleen.

Two important facts come in support of the opinion I have just given. Inflammation, it is true, sometimes invades a whole organ, but by no means is this always the fact; and when it is general, as, for example, in the whole of one lung, it is rare to find it in the same degree in every part; so that if the softening and increased size of the spleen were the effect

of inflammation, the laws of inflammation would be again overthrown by this organ, since this twofold lesion is always universal in it, and, with only one exception, I have always found softening to be in the same degree throughout. (Obs. 10.)

The other fact is relative to the perfect integrity of the membrane covering the spleen in all those cases, which it would be difficult to conceive of upon the hypothesis of an inflammation as general and as severe as that of the spleen must have been; since in the cases in which inflammation is found in other organs, the membranes covering these organs frequently partake of it. No one will answer me by saying, that the cartilaginous patches which form so often upon the surface of the spleen are the products of inflammation, since even upon this supposition, nothing would be proved in relation to acute inflammation.

We must conclude from the previous remarks that, in the present state of science, we cannot decide as to the nature of this lesion.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The spleen was much more frequently healthy in patients who died of other acute diseases than in those who died of typhus; for, out of eighty-three individuals in whom I examined it, I found it more or less seriously altered in thirty-two only.

It was extremely softened, and of double or treble its usual size, in three cases in which the patients died of peritonitis, scarlatina, and another of a disease which terminated very suddenly and unexpectedly; it was, moreover, softened, though in a less degree, in fourteen subjects in whom it was either

small or of natural size, and nine of whom had died of pneumonia. Finally, there was less softening in eight other cases, three relative to pneumonic patients, and in these last the organ was a little larger than usual.

Its consistence was natural in the last five cases in which its volume was twice or three times as large as usual.

So that out of thirty-two subjects in whom the spleen was more or less seriously altered in structure, eleven had it enlarged, and in twenty-five it was more or less softened.

It was not then, simply in the proportion of cases, but also in the character and serious nature of the lesions, that the spleen presented very marked differences between the patients who died of the typhoid affection, and of other acute diseases. There was, in fact, a kind of opposition between these two classes of disease, since in the latter the spleen was oftener small than large, and its softening oftener connected with diminution than increase of size. We must not, moreover, forget that not only the size of the spleen was much less frequently increased in these patients than in those who died of the typhoid affection ; but likewise that, even when it was most enlarged, it did not equal the size of the organ in its maximum of development in consequence of typhus.

The spleen having been, by no means, diseased in the cases of death from acute diseases different from typhus, I tried to see if the softening, which was the most constant and grave of all the lesions, could not be reduced to some law, the existence of which it would be easy to prove ; I have arrived at the following results.

Of these eighty-three patients, thirteen died before the fifteenth day of disease ; fifty-eight between the fifteenth and and thirtieth ; twelve after this period. Two of the first, who died between the seventh and ninth days, had the spleen soft-

ened; and twenty-three of the second. It had nothing remarkable about it in this respect in the others. That is to say, it was softened in a little less than a half of the patients who died between the fifteenth and thirtieth days; in the sixth part of those who died before that; and thus we see that its softening was not merely less in degree, but less frequent in the cases of which we are now speaking, than in those in which the patients died of typhus, but that it commenced generally at a more advanced period.

It is, moreover, remarkable, that the proportion of cases of softening was the same in those dying of pneumonia as among those who died of other acute diseases.

But because no one of the patients who died after the thirtieth day of disease had the spleen softened, shall we conclude that it had not been so at any period of the affection, or that its softening had taken a retrograde course? This latter supposition seems to me the most *probable*, inasmuch as it would be difficult to conceive that nearly one half of the subjects who died between the fifteenth and thirtieth days of the same disease should have had a secondary lesion, which no one of the others (twelve in number), who died later, experienced. Moreover, many lesions retrograde in the course of typhus fever, whose termination is likewise fatal, and *analogy* would indicate that such *must be the case* with the spleen.

Age seems to have no special influence upon this lesion, as the softening of the spleen was neither more nor less frequent, *ceteris paribus*, in young subjects, than in those who died at a more advanced period of life.

I endeavored to discover whether there was any connection between the diarrhoea, the more or less serious lesions of the mucous membrane of either intestine and the state of

the spleen, but I found none. The softening of this organ was not proportionably more common in patients in whom the mucous membrane of the intestine was more or less seriously altered, than among those in whom it was healthy. And the independence of these two kinds of lesions was still further proved by another fact of the same kind, still more remarkable, as it regards the special object of these researches, to wit, of four patients who died of acute enteritis, properly so called, which came on during a course of a chronic disease, either not far advanced, or just commencing, not one had any alteration of the spleen.

Thus the more we analyze, the more we examine facts under different points of view, the more we see that the morbid change of the spleen has something special and characteristic about it, in patients who are attacked with the typhoid affection.*

CHAPTER IV.

BILIARY APPARATUS.

ARTICLE I.

LIVER.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

SEC. 1. — Size of the Liver.

THE size was almost always natural; twice only I found it less, and five times it was larger than natural. In these same

* It is proper, likewise, to remark that the condition of the spleen bore no relation to that of the stomach, either in patients who died of typhus, or in

cases, especially the first, the organ had lost its usual consistence. (Obs. 12, 31). It was redder than usual in one of these patients (Obs. 45) ; pale or of proper color, in the others.

SEC. 2. — Consistence of the Liver.

It was diminished, and the texture of the organ was soft and friable in the great majority of the cases ; and in no one did it seem to me to be firmer than usual.

Softening, the gravest and most marked of all the lesions found in the liver, was observed in twenty-two subjects, or very nearly in half of the cases, and to a very remarkable degree, in four of them.

Like that of the spleen, it was universal, but generally was more marked in the great than the middle lobe, so that this difference was proportionate with that which exists naturally between these two parts. Far from being redder than natural, the liver, when thus softened, was pale generally, and its two elementary substances nearly confounded. It was not so moist as usual, and presented, in many cases, even a dry aspect on the surfaces of the incisions made in it, very nearly like what we see on cutting fatty livers, to which, however, it had no other point of resemblance.

When observed in its most marked degree, as in the four above-mentioned cases, the liver was very easily torn, and the finger was able to penetrate its substance without meeting any resistance. It was exactly the same in those cases in which the softening was less ; for, then, indeed, although the organ

those who died of other acute diseases ; also the same lesion of the spleen corresponded with the greatest variety of lesions of the mucous membrane of the stomach, and was present in the cases in which it was perfectly healthy, as well as in those in which it was softened and thinned. — LOUIS.

was flabby, its texture had not always lost much of its power of cohesion ; it seemed, in one case, to present more resistance even than usual to any effort made to tear it. (Obs. 29).

If the softening of the spleen, connected, as it often was, with increased dimensions and a darker color than natural, could be attributed at first sight to inflammation, such is not the case with softening of the liver, which is generally found connected with entirely opposite circumstances ; since it was generally pale, was of its usual size, or appeared smaller than usual ; was dry, and contained less liquid than usual ; so that if we were acquainted with any pathological state the reverse of inflammation, it would be right to refer this affection to it.

In this place occurs very naturally an important remark, viz. that there was not less difference between the livers which were softened, and those which were not so, than there was between the mucous membrane of the intestine which had lost half its usual firmness, without redness and thickening, and that which preserved its wonted strength of texture ; hence if the former of these softenings is incompatible with the idea of inflammation, the case must be the same with the second in analogous circumstances.*

Moreover, softening of the liver was not peculiar to any one

* It will be said, perhaps, that this is in contradiction to what I have previously stated in relation to softening with diminished thickness of the mucous membrane of the stomach. But this contradiction is apparent, not real. If I have shown the reasons for the opinion that this lesion is inflammatory, I have not positively stated that it is so, and the reader has not, perhaps, forgotten what I said in my previous researches, page 161 — 162. Besides, a portion of the mucous membrane of the stomach is softened and thinned, while it is continuous with a portion of the same membrane evidently inflamed, but such is not the case with the softening of which we are now speaking. — LOUIS.

of the principal epochs at which the patients died. It was observed in different degrees,

In 6 patients out of 10 of the first series,

3	"	"	7	"	second "
9	"	"	20	"	third "
4	"	"	9	"	fourth "

that is to say, that when viewed in a general manner, it was found to be only a little more frequent in those who died between the eighth and twentieth days of disease than in those who died after that period. But the difference was much more marked in cases in which the softening was greater, so that two of them are relative to patients who died on the eighth and ninth days of disease (Obs. 10, 12) ; two to individuals who were carried off on sixteenth and eighteenth days. (Obs. 6, 31.)

In the twenty-two cases of softening we are now examining, the consistence of the liver was too far below its natural healthy state, to allow us to suppose it to have been a mere variety of its healthy condition. But if, contrary to every appearance, we suppose it to have been so in some subjects, this hypothesis certainly would not be proper for the whole, still less for those cases in which the greatest degree of softening was found. In these, there was evidently a lesion, and a very serious one likewise ; it could not have arisen in twenty-four hours, and as it was found in two cases of patients who died on the eighth and ninth days of disease, it follows that it commenced in these two cases, if not at the same time, at least a very short time after the principal disease itself did.

Though not softened the liver had less cohesive power than natural, and was more or less friable in three patients, one of whom died on the twenty-third day of disease (Obs. 45), the

two others after the thirtieth. With this friability was connected increased size in two cases (Obs. 18, 45), and color somewhat redder than natural in one of them.

Was this condition, which we cannot confound with the softening above-described, inflammatory or not? We might think so for the two cases in which there was increased size, and especially for that in which the liver was redder than natural, but to assert this to be the fact, it seems to me would be to go farther than facts would justify.

SEC. 3. — Color of the Liver.

It appeared to me to be natural in twelve only of the patients, and was so somewhat more frequently in those who died after the thirtieth day than among those who died earlier.

It was redder than usual in eight individuals, and in five of these was a more or less marked congestion of blood (Obs. 3, 14, 22, 34, 45); a little more frequently among those who died between the eighth and twentieth days of disease than in those who died later. This redness was uniform through the whole thickness of one part, and was a little more marked only in the large than the middle lobe of the liver, and in the same proportion as in the healthy state of the organ. These circumstances, the uniformity and universality of the color, it seems to me, ought to make us renounce the idea that they were in some patients the result of inflammation.

In one case the liver had a yellow color, upon which were a great number of vivid amaranthine red spots, star shaped, an inch or more large in the substance of the organ as well as externally.

Finally, it was colorless, and more or less pale in twenty-one subjects, and in fourteen of these there was more or less of softening. With the pale color was connected a greyish tint in one of these last.

SEC. 4. — Organic Lesions of the Liver.

One patient who died on the fortieth day of the disease, had a lesion of this nature. (Obs. 17). The greyish, purple color of the surface of the liver, at a distance of fifteen or eighteen lines from its anterior edge, was changed over a space of four inches into a yellow hue, corresponding to a tumor of the same extent, composed of a yellowish, inodorous pus, which had but little consistence, and which was contained in a kind of areolated texture of a paler color. And in other points, somewhat deeply situated, were ten tumors of less size, yellowish, firm, not containing pus and in the substance of which the areolæ were marked by a color somewhat different from that of the rest of the mass.

The appearance of these tumors, whether suppurated or not, marked them as very different from tubercles, and it seems to me, as I have already said, impossible to decide upon their true nature.

There was no *emphysema* in a single case, but in three patients who died at various periods from the commencement of the disease, the blood vessels of the liver contained a greater or less quantity of air.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

1. The *size* of the liver was larger than usual in nine out of seventy-three patients in whom I examined it with care. To this increase of size was united a more or less deep red color in three cases, and in one of them considerable softening. If it is impossible to say that there was inflammation when there was merely an apparent increase of size and redness of the liver, it is very probable that inflammation existed in the case in which in addition to this twofold lesion was a very marked softening.

Moreover, the size of the liver was not oftener enlarged in patients who died of pneumonia than in those who died of other affections, so that allowing this increase of size to have been as real as it was apparent in some cases, it could not be considered, at least, with probability, as the product of mechanical congestion.

Instead of being larger than usual, the liver seemed smaller than usual in five cases, in three of which it was evidently softened.

Although we cannot affirm that this diminished size is less a pathological state than congenital formation, this latter supposition must seem the most probable, inasmuch as all the viscera of our bodies are subject, when in health, to variations in size at least as great as that of which we are now speaking

2. The liver was less *consistent* than usual in a great number of the cases, although less often than after the typhoid affection. It was soft in sixteen subjects, or in nearly a fourth part of the whole, and the softening was extraordinarily great in five among them.

As after the typhoid affection, the liver, when softened, was generally pale. In four cases of extreme softening, in three of which was likewise emphysema of the liver, the color of the organ was greenish.

Incisions being made into it, the cut surfaces presented a dry, unpolished appearance in many cases, as in patients who had died of typhoid fever.

There was not only a great analogy between the last mentioned disease, and the others we are now speaking of, in relation to the degree of softening of the liver, but likewise as to the rapidity with which it took place; for two of the cases in which it was most marked, were those of patients who died of scarlatina on the sixth and seventh days of disease. And, as

after the typhoid disease, the highest degree of softening was not found in patients who died after a month of suffering.

The liver was rather friable than soft in six other patients. Its color was pale in none, and this has been remarked in analogous cases in patients dying of the typhoid affection. This difference of color, as I have already remarked, is one of the distinguishing marks between softening and friability of the liver.

Age seemed to have no appreciable influence upon this twofold lesion, which was found in very nearly the same proportion in patients whose ages were between eighteen and eighty.

3. The *color*, as we have already seen, was very variable, and the same shade did not always coincide with the same degree of consistence or same size of the organ. The color was natural in twenty-six patients, or in very nearly in a third part of the cases; it was pale in fifteen, among whom were many in whom the liver was not softened; it was redder than usual in sixteen others, whether increased in size or not, whether softened or not; it was greenish or of a pistachio color (*pistache*) throughout the organ in five cases, in three of which was *emphysema* of the liver.

4. This *emphysema*, which coincided with an analogous state of the cellular tissue of the neck and limbs to a greater or less extent, was especially remarkable, as I have elsewhere observed in an analogous case,* in this, that notwithstanding the great number of void spaces in the liver, the organ was not larger than natural.

In whatever light, however, we regard the origin of this

* See my "Researches upon Phthisis," pages 120 and 147. — LOUIS.

affection, whether we consider it to have commenced before or after death, it seems to me impossible to conceive without astonishment of the fact that an affection, heretofore called putrid fever, has never given rise in any one of the forty-six cases we are analyzing to any phenomena justifying this title, whilst other diseases, whose natures do not repel the idea of putridity, would seem, from the above result, to have this character often.

5. The liver presented one other lesion which was not observed in the typhoid affection. It was evidently fatty in two patients who died after the thirtieth and fifty-seventh days of disease ; the first of peritonitis, the other of an affection which was supposed to be the disease now being investigated, but which was not characterized after death. (Obs. 52). The subjects of these two observations were in perfect health when seized with the disease which brought them to the hospital, so that the time at which this fatty morbid change began was probably posterior to that of the diseases, which were not complicated with any organic affection of the lungs.*

If the liver was oftener diseased, and especially if it was oftener softened in patients dying of the typhoid affection, than among those who died of other acute diseases, its softening, as we have seen, was as great in one as in the other. This fact justifies the remarks I have made upon the peculiar character of the lesions of the spleen in the typhoid affection, in which they were much more frequent and much more serious than in the course of other acute diseases.

* The reader is aware that a fatty state of the liver is found almost without exception in consumptive patients, and especially among females. — LOUIS.

ARTICLE II.

BILE AND GALL-BLADDER.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The bile had varieties of color and consistence; the gall-bladder, some lesions which are not without interest.

The *bile* was ruddy, sometimes greenish and very fluid, although in different degrees, in twenty-five subjects, of which

4 out of 10 were of the first series,				
4	"	7	"	" second "
10	"	20	"	" third "
7	"	9	"	" fourth "

That is to say, the proportion of cases in which we observed this color and liquidity of the bile was a little greater in patients who died after twenty days of disease than in those who died before this period.

In reference to quantity, the bile was two or three times more copious than usual in ten subjects out of twenty-five, and oftener among those who died between the eighth and twentieth days than in those dying at a later period.

These qualities of the bile were not always connected with the same condition of the liver, for example, softening was found in nine cases only of the twenty-five, and in the same proportion in patients in whom the bile was very abundant, as in those who had a much smaller quantity of it.

Among the others the bile had qualities entirely the reverse of those we were just speaking of; it was somewhat thick and viscid, blackish, of a mahogany or apricot-jelly color, and with this hue it had great viscosity in an individual in whom the

great lobe of the liver was soft and dry. (Obs. 21). This organ was more or less friable in other patients.

The bile was at the same time very liquid, ruddy and turbid, in four cases in which the gall-bladder seemed to me to be perfectly healthy. (Obs. 7, 13, 17, 19). The condition of the liver was, moreover, very various in these cases.

The *gall-bladder* contained little or no bile in three cases in which it had, at its dependent part, a purulent, yellow matter of good consistence. (Obs. 1, 11, 28). Its mucous membrane was more or less red, and about three quarters of a millimeter thick in the same subjects, and in the case in which mention is made of its consistence it was sufficient.

In another, the bladder contained a fluid which was turbid, greyish, thin, not evidently purulent, but likewise it had not the slightest resemblance to bile, whilst the mucous membrane of the gall-bladder was healthy, except that it had a slight rose tint mixed with grey. (Obs. 36).

Finally, in two cases, one of which is given among the previous observations, there was no bile in the gall-bladder, and in its place was a transparent, aqueous, diaphanous or urinous liquid. In both, the mucous membrane of the gall-bladder was healthy. The cystic duct was entirely obliterated in the case in which the bile had the appearance of urine; it was merely compressed by the enlarged lymphatic glands surrounding it in the other.

It is worthy of remark, that the subjects in whom the mucous membrane of the bladder was manifestly inflamed, died on the eighth, twentieth and twenty-eighth days of disease; that the patient, in whom there was a turbid, greyish, but neither bilious nor evidently purulent fluid instead of bile, died after three weeks of illness. Thus the lesions of the gall-bladder followed the same law that those of other organs did, which

for the most part were more frequently and more seriously diseased in those cases in which death occurred early than in those in which it took place at a distant period.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

These patients presented the same alterations in the bile and gall-bladder as those who died of the typhoid affection, but in different proportions.

For example, the bile was ruddy, slightly colored, yellowish and very liquid, in eight cases only, among which was one in which it was very copious. The liver was more or less softened or friable in six of these subjects, so that it would seem that this twofold morbid condition of the liver was somewhat connected with the bright color and liquid character of the bile.

It was of a very dark color, very viscid and thick, in eight other cases, in one of which it was pulpy and similar in consistence to the substances found at times in the portion of the small intestine nearest the cæcum. The liver was softened in one of these cases only, which increases the probability of the truth of what I just now stated.

With two exceptions merely, the bile presented nothing remarkable in the remainder of the individuals. These exceptions relate, one, to a patient who died of softening of the brain, and in whom the bile in the gall-bladder was turbid, without having other sensible alteration, whilst the gall-bladder was perfectly healthy; the other, to a pneumonic patient in whom the bile was small in quantity and mixed with pus, the parietes of the gall-bladder thickened and its mucous membrane more or less red.

Changes in the bile and gall-bladder were therefore much

more frequent in the course of the typhoid affection than in that of other acute diseases, and it is remarkable that the sole case of inflammation of the mucous membrane of the gall-bladder, observed in these last, relates to a pneumonic patient, that is, to a patient who was attacked by an affection which is accompanied generally with the most remarkable febrile movement, and in which the secondary inflammatory affections are more frequent than in other acute diseases, with the exception of the typhoid affection.

CHAPTER V.

APPARATUS FOR THE SECRETION OF URINE.

Kidneys; Pelves of the same; Ureters; Bladder.

ARTICLE I.

KIDNEYS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

THEY were almost always natural, and when diseased they were slightly so.

Their *size* was a little larger than usual, in three subjects who died on the eighth, eighteenth and twenty-second days of the disease. (Obs. 6, 11, 36). This increased size was observed in but one kidney, in a case in which both organs were softened, the cortical substance being of a pale rose color, the tubular of a deep red. (Obs. 6). In the two others, a darker color than natural of the cortical substance was connected with an increase of size, (perhaps natural, or anterior to the disease), but no softening.

It may be asked, if in the case in which there were at the same time softening and increased size, the condition was not the result of inflammation, but this question can hardly be thought of in relation to the last two cases in which the increased size was perhaps rather imaginary than real, and there was no softening.

The *consistence* of the kidneys was less than usual, in six subjects, or in a sixth part of those about whom I took notes. Four of them died between the eighth and fifteenth days of disease, the fifth on eighteenth, the sixth on thirty-ninth. There was no vascular congestion save in one, and in that to a moderate degree. The color of the kidneys was more or less red, purplish in the other cases, either throughout their whole substance, or in the cones of the tubular part. This color was spotted with yellow points, which appeared to be the result of inflammation of one of the kidneys, in one patient of whom the corresponding pelvis contained a great quantity of pus. (Obs. 15.)

The *color* of the kidneys was darker than usual in seventeen of the forty-two patients in whom I studied it, generally of a violet red color, and this color, which was observed sometimes in the tubular cones, at others, in the cortical part, was likewise found at times throughout the whole organ.

This color was a little more frequent in patients who died between the eighth and fifteenth days of the disease, than in those who died after this epoch, especially after the thirtieth day, whilst in five cases in which the kidneys were more or less pale, not one of them relates to a patient who died during the first period of disease.

Softening and change of color in the kidneys were, therefore, like the same alterations found in other organs, more

frequent among those who died early in disease, than among those who were in different circumstances.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The kidneys were larger than natural in six cases. This increase of size was limited in one case to the left kidney, which was of nearly double its usual size, and as no alteration of color or consistence was connected with it, we may believe it to have been congenital. In an individual in whom the two kidneys were not less enlarged, they were very much softened, rather friable, and the cortical substance, which was almost the only part affected by this twofold lesion, had a light yellow color, but presented no evident traces of pus. The subject of this observation was a patient who died of pneumonia on the eighteenth day of the disease, and it was the only one in whom the kidneys appeared really inflamed. Excepting their size, they presented nothing remarkable in the other cases.

They were somewhat soft in eight individuals, in four of whom they were redder than natural, in four, on the contrary, they were less colored.

The kidneys presented a much deeper shade of color in twelve patients, or in a sixth part of the patients, and this color, more rarely bluish or livid than in the typhoid affection, was as frequent in those dying of pneumonia as of other diseases; so that mechanical obstacles to the circulation do not appear to have had much influence, those obstacles, at least, which preceded death a certain number of days, the circulation having been more or less troubled some time before the fatal period, whatever may have been the cause of death.

Instead of having a somewhat dark red color, the kidneys were greenish or of a grey blue color in three subjects. One of them died on the twelfth day of phlegmonous erysipelas of

the lower extremities, and the kidneys were truly *emphysematous*. The blood vessels contained a greater or less quantity of bubbles of air in two others.*

ARTICLE II.

PELVES OF THE KIDNEYS AND URETERS.

The mucous membrane of the *pelves of the kidneys* was evidently thickened and very full of red points, so as to appear to have a uniform color when viewed at a very short distance in a patient who died on the fourteenth day of the typhoid affection. (Obs. 23). The same lesion existed in another case in which the mucous membrane had a good consistence, and was bathed with seven or eight† ounces of pus of very good quality. (Obs. 15). If the inflammation was evident in this case, it was not less so in the other, in which I regret I did not mention the nature of the fluid contained in the pelvis.

The *ureter*, corresponding to the pelvis which was full of pus, was contracted and did not allow of the passage of this fluid into the bladder, and its mucous membrane was thick and red like that of the pelvis. This was the only one of the cases which we are now analyzing in which the ureters seemed to me to be evidently diseased.

* Three of these subjects had upon the surface of the kidneys a number of transparent elevations, formed by cysts containing serum, about the size of a hemp seed, or of a pea. In a fourth, instead of cysts we found small, solid, yellowish and greyish, brilliant and homogeneous bodies, and they were found internally as well as externally. The first three subjects were more than fifty years old, the third was only thirty-five. — Louis.

† See Appendix, Verification of the Tables. — H. I. B.

In patients who died of other acute diseases the pelves and ureters had nothing remarkable about them.

ARTICLE III.

URINARY-BLADDER.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

It was very much distended with urine in a fifth part of the subjects ; it was of its ordinary size, or very small in the others.

The mucous membrane was more or less injected in six cases, three of which were among those in whom the patients died between the twentieth and thirtieth days of disease ; it was rather less firm than usual, but without a trace of any other lesion in two individuals who died after twenty-two and sixty-five days of disease. It had a small ulcer near the meatus urinarius in one subject about whom I have already spoken. (Obs. 23). It was natural in the others, that is in nearly all the cases.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The urinary-bladder was considerably distended with urine in a ninth part of the cases ; it was, on the contrary, very small in a seventh, so that it was not larger than an unimpregnated uterus, and contained a few drops only of urine. This fact appears to me important, inasmuch as it proves one of two things, either that there is a contraction of the bladder, a longer or shorter time after death, or that the secretions do not continue to increase after the general death of the body.

The mucous membrane of the bladder was injected in three cases, and did not present either thickening or softening in

any patient, not even in a female who died of puerperal metritis, and in this case the bladder contained a small quantity of pus.

The caput gallinaginis was emphysematous in an individual whose kidneys were thus diseased.

There was no ulceration in any case.

Thus, among one hundred and twenty patients who died of acute diseases of all kinds, I met with only one very small ulceration of the mucous membrane of the bladder in a case of the typhoid affection. This fact, notwithstanding its minuteness, if I may be allowed to use the expression, is of importance, inasmuch as it shows, when combined with all which precede, a marked and peculiar predisposition to ulceration in individuals attacked with the disease which we are now studying.

CHAPTER VI.

PANCREAS AND SALIVARY GLANDS.

ARTICLE I.

PANCREAS.

It was oftener natural than the kidneys and its lesions were less important than those of these same organs. In the *typhoid affection* I found it rose colored, or of a slightly livid red hue in nine subjects, three of whom died between the eighth and fifteenth days of disease; it was yellow in another and of a bluish grey in a last, who died after forty days of disease. (Obs. 16.)

In one of the cases in which it was red the pancreas was evidently larger than usual. Its consistence was increased in that in which it had a yellow color.

There was no alteration of it in the rest of the patients.

These facts, doubtless, are not very interesting, still, the case in which the pancreas had a bluish grey color seems to me worthy of attention, inasmuch as it is the only one of its kind, and as it is the history of a patient who died on the forty-first day of the disease, that is to say, at a period at which the more or less bluish tint is evidently for many organs the passage of the red color to the paleness which is natural to a great number of them after death ; so that in this case we may suppose that the pancreas had been previously red, and that the bluish hue is only a change of this red color. I propose this explanation as a conjecture simply ; but the fact in whatever way we consider it must be preserved, and it increases the number of those which establish that in subjects who die of acute diseases the grey or bluish color of organs, which are naturally white, is found almost solely in individuals who die after a space of time somewhat great, beyond four weeks.

The pancreas was somewhat red throughout in five patients who died of *other acute diseases*, and was very flaccid in one of them who died of pneumonia. It was very much enlarged in another who died of the same affection ; it was harder than natural in a man who was of an advanced age.

ARTICLE II.

SALIVARY GLANDS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

Although I almost always omitted to mention in my notes the state of the salivary glands, I am sure that they were

very rarely the seat of morbid change in the disease we are studying. For, as I have already stated, I removed at the autopsy always the soft parts of the neck, in order to be able to examine with more care the pharynx, œsophagus and larynx, and I did so by cutting upon the internal face of the lower jaw ; I always, likewise, divided the tongue through the middle. If the submaxillary and sublingual glands had been in any marked manner diseased, the affection would not have escaped my examination any more than in the case of which I shall soon speak, in which I had not suspected during life the morbid change I observed after death, and I should have taken notes of it, as in this case. I am, however, very sorry that I did not examine with care these glands, as I am convinced that they would have furnished me with useful data which would, like those given previously, either support or confirm some of the corollaries which I have given previously, and I insist upon this absence of data in order that it may serve as a warning to the reader, and that it may be supplied by those who apply themselves specially to similar researches.

However, I found the submaxillary and sublingual glands diseased in no case, and twice only I saw the region of the parotid either at the right or left side increased in size, this enlargement being owing once to an inflammation of the surrounding cellular tissue, which terminated in suppuration (Obs. 17), and in the other to the parotid itself. This case is that of an individual who died on the thirty-ninth day of disease, and some days before death suffered pains in the region of the parotid, and in him I found the parotid of twice its usual size, alternately of a yellow and red-brown color externally as well as internally, and in it were many little cavities containing pus of good quality, which bathed the substance of the gland, which last was more or less red in color, whilst in the parts

where there was no pus, the glandular granules were separated from one another by a cellular membrane of a deep red color, more or less thick and much less flexible than natural. (Obs. 15.)

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The sublingual glands had experienced violent inflammation in one case. One of the parotids was enlarged, was more or less red throughout, and had a great many small cavities containing pus in a patient who died of pneumonia on the eighteenth day of the disease.

Thus inflammation of the parotids was equally rare among patients dying of the typhoid affection and of other acute diseases; and all that we can deduce from these facts is this, that the parotid glands are subject, in some manner, to the law which governs other organs, and are like them susceptible of more or less serious morbid changes in the course of acute diseases, whatever may be the seat of these diseases. And if these facts do not deceive us, if chance only caused me to observe inflammation of the parotid in merely one of the patients who died of the typhoid affection, we must conclude that this inflammation ought not to be ranked among the symptoms of this last disease, and that if it has been placed heretofore among them, the error doubtless arose from the circumstance that we trust the results of observation to memory, and therefore we retain those facts alone, which are the most marked, which are rather the exceptions to the rule, or which most seldom occur.

I will terminate by one more observation, viz. the pancreas having presented no evident traces of inflammation in any case of typhus fever or other acute disease, we may infer that perhaps it differs more from the salivary glands than it appears to me it is generally supposed.

CHAPTER VII.

GENITAL ORGANS.

ARTICLE I.

IN MAN.

THERE was no appreciable alteration of the prostate or of the veciculæ seminales in any one of the subjects who died of the *typhoid affection*.

It was the same case with those who died of *other acute diseases*, save that in one who died of pneumonia the prostate was red throughout to the depth of two lines from its surface. This organ was generally larger in the latter class of diseases, than in patients who died of typhus, but this was owing solely to the age of the individuals, for those attacked with the latter diseases were much older than those who suffered from the typhoid affection.

ARTICLE II.

IN THE FEMALE.

The ovaries were somewhat red internally in a third part of the cases of *typhoid fever*, and in the whole of them the patients died between the twentieth and thirtieth days of disease. The uterus was in an analogous condition in three others who died on the eighth, fifteenth and twentieth days of disease, and in a seventh case the fallopian tubes were evidently enlarged, and contained rather a copious supply of red mucus.

These slight lesions, very nearly the same in all these three organs, had followed in their development the law usually

followed by the severest lesions. Was there nothing here more than a simple congestion of blood?*

The uterus was not throughout of a red color in females who died of *other acute diseases*, except in the case of one who died of pneumonia. And the ovaries did not present any alteration which could be considered recent, and the consequence of the disease of which the patient died.

CHAPTER VIII.

ORGANS OF CIRCULATION.

Pericardium, Heart and Aorta.

ARTICLE 1.

PERICARDIUM.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION

THE pericardium was almost always natural. Seven times merely I found in it an effusion of some spoonfuls of serous

* Out of ten females who died of the typhoid disease, and whose ovaries I examined with care, four had a certain number of small cysts in one of these organs; one had cysts in both, and these females were between nineteen and twenty years of age. About those who died of other acute diseases, as they were older, I have no need to make any remarks at this time, as I meant in this note merely to signalize a lesion which may be a frequent cause of sterility, and for the purpose of requesting those who study pathological anatomy to examine and note with care the state of the ovaries found at the autopsies they may chance to make of young females, in order at some future day to establish on a great scale the proportion of cases in which the ovaries are more or less changed in structure, between the ages of eighteen and forty years.—LOUIS.

fluid of a lemon color in six patients, bloody in the seventh who died on the twenty-fourth day of the disease, and in which there was no other similar effusion in any other serous membrane. (Obs. 37). The duration of the disease seemed to have no influence upon this slight exhalation of serous fluid, the proportion of cases in which it was observed being very nearly the same in the different groups.

I remarked in one case that the pericardium had lost its brilliant and moist aspect, and seemed dry. But this appearance, I am quite sure, was seen in many cases.

None of the cases had the least trace of recent inflammation of the pericardium, and there was no adhesion of this membrane to the heart except in one case.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The condition of the pericardium was different from that just mentioned. In addition to a slight effusion of yellowish serous fluid in six of them, and of bloody serous fluid in three others, the pericardium presented marks of acute inflammation, either slight or severe, partial or general, in eight cases, two of which were of subjects who died of softening of the brain, and the other six of pneumonia. This difference cannot be attributed, as we shall soon see, to the condition of the heart, and we can hardly account for it except from the proximity of the inflamed organ, the lung, in six eighths of the cases. It is proper likewise to remark that, with the exception of one subject aged eighteen years, all these were generally quite advanced in age, being from fifty to eighty years old. This seems to show that the feebleness arising from age is not less favorable for the development of inflammation than that

which is owing to disease, and that, doubtless, it is one of the causes to which we must attribute the difference to which we have just alluded.*

Three patients who were aged from sixty to seventy-eight, had adhesions of the pericardium to the heart, and in one case of softening of the brain, about which I shall speak hereafter, the pericardium was likewise distended with bloody serum and gases.

ARTICLE II.

HEART AND ITS CONTENTS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The heart had the size, consistence and color natural to it in half of the cases, or in twenty-three subjects ; rather less frequently, *ceteris paribus*, among those who died between the eighth and twentieth days of disease, than among those who died after this epoch.

It had less consistence than natural in twenty-four other subjects. This diminution of consistence was slight in seven cases, and as when in this degree one might consider it less as a morbid state than as a variety of the natural consistence, or as it is called, of its physiological state, I shall not consider these cases in what follows, and thus the number of patients we must examine is reduced to seventeen.

The softening of the heart was, moreover, very slight in two of these cases. But as it was limited to the left side of the organ, we cannot consider it as the result of natural disposition ; but there is a still more important reason for this opinion,

* In relation to this subject, see my "Researches upon Phthisis." —
LOUIS.

viz. it happens sometimes, when the softening is considerable, that it is more so at the left than at the right. In the other cases it was universal and very marked, the heart was very flaccid, so that in many cases it had no precise form, but like a wet cloth retained any shape into which it might happen to be placed. Its substance in these cases had very little power of cohesion, was easily torn, and was very easily penetrated by the finger.

At the same time that it was softened, the heart had less color than usual in many cases; it was of an onion-peel color, which varied in intensity, and was generally livid and purplish on its surface as in its substance. The internal face of the ventricles and auricles was, on the contrary, of a deep violet-red color, which color sometimes penetrated beyond the lining membrane and appeared owing to an imbibition of blood, which it resembled more or less in color.

When thus softened and pale, the heart had no longer when cut the slightly moistened aspect it has generally, but it was, as it were, dry and unpolished, much as we have seen the liver appear in analogous circumstances. Its size was not larger than usual, and it appeared smaller in two cases (Obs. 14, 33), and, therefore, it appears to me, we ought not to consider it as an effect of the softening of the organ, but rather as a natural *disposition* which existed in other patients likewise in whom the heart presented nothing else remarkable, (Obs. 31, 39, 41).

Another fact, which it is important to notice is this, viz. that in nearly all these cases of softening, the walls of the ventricles were evidently much less thick than usual, those of the left especially, which were often three lines thick only. And as this diminution of thickness was limited to cases of softening we must consider it as a morbid affection.

If these facts are insufficient to enable us to discover the cause of the softening of the heart, at least they exclude the idea of one of those affections which usually cause a great number of affections, viz. inflammation. For how can we allow that inflammation is the cause of an acute softening accompanied by diminution of thickness, paleness of color and a kind of dryness of the texture which is the seat of it? Such a supposition would truly imply contradiction, and, as I remarked in relation to the softening of the liver, if we knew any cause of disease exactly the reverse of inflammation it would be proper to refer this softening to it.*

Other considerations which I have already given in relation to the spleen support these reflections. The walls of the heart, although more or less softened, had never any pus in them, and there was never any inflammation of the pericardium, which would have been the case rather frequently in softening of the heart had this softening been caused by inflammation. And in opposition to this opinion, we cannot produce cases of pericarditis observed after other acute diseases, inasmuch as softening of the heart was found in two cases out of eight in which there was pericarditis.

Moreover, the frequency and severity of the softening were much more marked according as the disease was more early fatal. Thus the heart was softened in nearly half of those patients who died between the eighth and twentieth days of disease, in a third of those who died during the following period, and in a somewhat smaller proportion among those who died afterwards. Besides, in seven cases in which the softening was extreme, not one was relative to individuals who died after the thirtieth day of the disease, and I found

* See what has been said on this subject, page 260. — LOUIS.

4 out of 17 patients of the first and second series,
 3 " 20 " " third "

Hence we see that whatever was the degree of softening the proportion of cases in which it took place in the different series of patients was very nearly the same ; and it was like that of the liver and spleen more serious in those who died early in the disease than in those who died after the twentieth day, and we did not find it at its *maximum* in patients belonging to the fourth series. The rapidity of its development showed the extreme violence of the cause to which it was owing in certain cases, and as other lesions of the same kind, it necessarily contributed much to produce death and hasten its arrival.*

Another fact which seems to me to be not less remarkable than the rapid softening of the heart is this, viz. no similar lesion was found in any other muscular organ ; as all the muscles which preside over voluntary motions preserved, amidst the general disorder, the consistence and color which are natural to them.

The *blood* contained in the cavities of the heart had various characters according to the condition of the organ. In those cases in which the consistence was natural, there were found nearly always in the heart, generally in the right side of it, sometimes solely there, whitish or yellowish, and more or less firm fibrinous concretions. In one of those cases in which the

* I cannot forbear remarking that the proportion of cases of softening would remain very nearly the same if we admitted among them those in which the lesion was much less marked, and this seems to indicate that those cases which, for fear of error, I made no mention of, were really specimens of morbid change, and not simple varieties of the healthy state. —
 Louis.

heart was slightly softened merely, one of the concretions was found, but it was less firm than in the preceding. (Obs. 7). When the softening was considerable, mere clots of blood, not in a fibrinous state, were found in ventricles and auricles, and in its highest degree there was found instead of clots of blood, merely a few drops of it mixed with bubbles of air.

There was, therefore, a certain relation between the state of the heart and that of the blood. But were these conditions dependent upon one and the same cause, or was one an effect and the other a cause? We cannot possibly decide this question rigorously, although the first supposition is doubtless much more probable than the second.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

In seventy-five cases in which the condition of the heart was noted with care, this organ presented numerous varieties in *size*, and the thickness of its parietes was often greater than natural. This presents a remarkable difference between these patients and those who died of the typhoid affection, and it is explained by the difference in age of the two classes, the patients who died of typhus being young, while thirty-five of those who died of other acute diseases were from forty to seventy years old and upwards.

Excepting these cases which were nine in number, and in some of which the heart had more consistence than natural, but had in no one less than usual,* it was softened in fourteen, and in many to a degree comparable with that of which we have just spoken. That is to say, that then it took

* It is a fact worthy of notice, that in every one of the cases in which the parietes of the heart were evidently thickened were they likewise softened. — LOUIS.

more or less every form that was given to it ; it was easily penetrated and torn ; it was of a pale red or livid hue outside and in its substance ; it had an unpolished and dry appearance when cut, the parietes of the ventricles being somewhat thinner than usual. Although the proportion of these cases was much less than among patients who died of the typhoid affection, it was considerable and analogous to that of other cases of softening.

As to the *condition of the blood*, although it was generally intimately connected with that of the heart, it is proper to state that in three cases of pneumonia in which there was evident softening of this organ to a remarkable degree, it contained fibrinous concretions in the right side of the organ. And if this difference between these cases and those of which we have previously spoken may be explained by the condition of the blood drawn during life in two classes of the affections, it seems to me, likewise, to prove that there is not always a necessary connection between the heart and the state of the blood, as evident as one would have thought at the first glance. However, I ought to make special mention of a very remarkable case, and very favorable to the opinion which these last seem to oppose. It relates to a female who died of an acute softening of the brain. In her the heart was extremely softened, nearly without blood and very much enlarged in consequence of the development of much gas in its left ventricle, the pericardium being likewise distended with the same gas and a bloody serous fluid. In this case during life, the blood seemed likewise, as we shall see hereafter, truly dissolved. That is to say, that the case in which the softening of the heart was greatest was likewise that in which the blood seemed most seriously altered either during life or after death.

This softening, moreover, was not equally frequent after all

these acute diseases ; it was not observed save in an eighth part of the subjects affected with pneumonia, whilst I found it in two out of five cases of nearly sudden death which occurred under entirely unexpected circumstances during convalescence from slight disease ; twice in eight cases of softening of the brain ; once in two cases of scarlatina ; twice in two cases of variola, and in two cases of phlegmonous erysipelas of the lower extremities, the only cases of the disease I have seen in which there was a fatal termination. That is to say, that if we suppose these last proportions an effect of chance, it is not less certain that softening of the heart is a very frequent lesion in patients who die during the course of acute diseases of the skin, more frequent, doubtless, than in those who die of any other acute disease, without the exception even of typhoid fevers.

This softening seemed to be not influenced at all by age ; at least, I met with it equally in those who were more or less than fifty years old ; it was not observed in any one of those who died after thirty days of disease, and it was found in one case of scarlatina, in an individual who died on the sixth day of disease. In this case and many others in which the fatal period was very near the commencement of the disease, the softening of the heart was extreme, the liver and kidneys had lost considerably their healthy consistence. In such cases, I repeat, in which diseases arrive at a fatal termination so very rapidly, what rule of practice is necessary, supposing the affection to have been certainly recognised ? We cannot too often insist upon those secondary lesions which must have so often so great an influence upon the result of the disease, and whose nature it is so difficult to penetrate.

ARTICLE III.

AORTA.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The aorta was natural in twenty-three out of forty-two subjects in whom I described it with care, that is to say, it was without redness, thickening or organic lesion of any kind. In the others it was of a more or less vivid red, either in patches, which were generally pale and spread through the whole track of the intestine, and somewhat large in six cases ; or the redness was equally spread throughout as in the remainder of the subjects. In this latter case its redness was almost always very vivid, and generally extended beyond the bifurcation of the aorta, and, in many cases, even to a considerable distance into the large arterial branches.

Whether the color was white or red the aorta contained a certain quantity of clotted or fluid blood. Its redness penetrated more or less deeply into the middle coat, and was limited in no case to the lining membrane.

This last, when examined attentively in two individuals who died on the eighth and fourteenth days of the disease, had the tenuity and consistence which are natural to it. It was rather softened in a third.

There was one very remarkable fact, viz. this redness existed, if we except five cases, in those alone in which there was softening of the heart ; moreover, it was slight in four of the excepted cases, whilst it generally was much more vivid when the heart was softened and in proportion to its softening.

One consequence resulting naturally from this fact is, that the redness of the aorta could not be equally frequent, *ceteris*

paribus, in the different series of patients into which I have divided my observations. I found redness in

6 patients out of 10 of the first series,

3 " " 6 " second "

8 " " 20 " third "

1 " " 7 " fourth "

It, moreover, was very slight, and consisted of some spots of a pale rose color in this last (Obs. 16), so that the redness of the aorta, whatever was its nature, was like the majority of the secondary lesions which we have heretofore noticed, more frequent and more marked in cases in which the patients died rapidly than among those who died at a later period of the disease, and this would seem to show it to be something more than mere imbibition.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

Without reference to the organic diseases of the aorta, so frequently found in subjects of advanced age, this artery was red in twenty-one cases, or a little less than a third part; four times in spots which were usually pale; or the redness was uniformly spread as in the other cases, and to a more or less remarkable degree in fifteen.

As in patients who died of the typhoid affections, the aorta, whether red or pale, also contained a certain quantity of liquid or clotted blood, which was more or less blackish; its middle coat seemed diseased as its internal one was; it was red but in a less degree. The internal membrane was examined with care in five cases; it was of a more or less vivid red color, and in two of these cases the internal membrane was not altered in thickness or consistence; it was evidently thickened, but not softened in a third; it was a little softened and less ad-

herent than usual to the middle coat in the two others. Finally, the redness was uniform, or in spots which were more or less large, and it coincided in fifteen cases with a more or less marked softening of the heart.

The color of the aorta has been particularly investigated by many distinguished physicians of late. Some have considered the red color as the simple effect of imbibition which would have been caused by violent deaths as well as by various diseases; others have regarded it as the result of inflammation on which depended a series of symptoms, called inflammatory fever. But the facts which we have just analyzed cannot, as it seems to me, be accounted for under either of these hypotheses.

And, in fact, if the red color we are speaking of is simply a consequence of imbibition, if it suppose no special condition of the blood or of the aorta previously to death, why should it not be found in all the subjects in whom the aorta contains blood? Why does it seem connected with softening of the heart; why is it more frequent in those who die suddenly than in those who fall after a long continuance of disease? On the other hand, if it is the result of inflammation, how happens it that I perceived no difference between the symptoms I noted in those patients who had the aorta red and those who had it not? And why also did not the subjects who died of chronic or of acute diseases different from typhus, and in whom this redness was equally frequent, present any symptoms of this last affection? One patient who died of consumption in a short space of time presented, during the latter periods of his existence, symptoms similar to those of continued, inflammatory or putrid fever, and at the autopsy I found the aorta healthy.*

* "Researches upon Phthisis," page 187. — LOUIS.

It will, perhaps, be said that negative facts prove nothing against positive ones, and that those I have observed prove nothing against those observed by others. But the objection is less embarrassing than one would at first suppose. For if the physician, whose opinion I wish particularly to understand, had made deductions from rather incomplete observations, in which a description of the arteries in the cases called putrid fevers was omitted, or if something was left unexamined in the organs of digestion in diseases called inflammatory fevers, we readily perceive that his conclusions, although rigorous, might possibly not be just, and unless I am mistaken, such is really the fact ; therefore the objections just made have all the force originally given to them. It may be supposed, in consequence of the want of special symptoms, that this redness is the result of inflammation which came on during the last days of life, as is observed with regard to so many other lesions.

But this last hypothesis, although rather probable in certain cases, is not easily proved. Perhaps it will be said that some of the facts above given are favorable to this hypothesis, since in a certain number of the cases in which the aorta was red, I found its internal membrane either thickened without softening, or softened with or without thickening and easily detached from the middle coat ; and these are the characters which are observed often in inflamed membranes. Now to this I would answer, that softening can arise, and, in fact, does arise rather frequently from a cause entirely different from inflammation, as it appears to me we proved when speaking of the heart and liver ; and on the supposition that such is the fact with the aorta in some of the cases, (which supposition no one can avoid making,) then the thickening of its internal membrane proves nothing, since it may be attributed, to a certain extent, to imbibition which, as it seems to me, takes place in all

these cases, and is proved to exist by the fact, that the middle coat is always more or less red underneath the internal coat, and much less so than this last. Thus we see that nothing proves this thickening and softening to be the effects of inflammation, although, as I previously stated, the fact was somewhat probable in certain cases and under ordinary circumstances.

As I cannot doubt the accuracy of the observations which I have collected, nor consequently admit either of the theories already stated, I must conclude from the preceding facts, that the red color is a peculiar phenomenon of imbibition, which supposes a more or less serious change of the blood, or of the texture of the artery, or both, in a certain number of cases.

That it is a phenomenon of imbibition, the fact of the red color gradually diminishing towards the middle coat sufficiently proves. This phenomenon requires peculiar conditions either of the blood or of the aorta, since this last remains white in half of the cases, although bathed by a greater or less quantity of liquid blood. If the internal membrane of the aorta remains natural excepting its color, we must presume that the cause of the redness is some alteration in the blood which allows its coloring portion to escape ; but if, on the contrary, this membrane is more or less softened with or without being thickened, it is probable that this coat itself is the cause of the phenomenon, either exclusively or in connection with a certain alteration in the blood, an alteration which, after what has been already said, we cannot doubt exists really in the majority of the cases of this kind, and which is found in very few patients when the artery is perfectly healthy.

Analogy confirms this opinion ; for the bile does not by any means always give a yellow color to the tissue with which it may be in contact ; so that we find sometimes throughout the whole extent of the stomach only one yellow spot. Now

how can we explain these facts unless we admit that this color requires a more or less morbid alteration of the tissue which is bathed by the bile, or of the bile itself?

But does the color of the aorta, in the case in which we must consider it as the product of imbibition, take place before or after death? It appears to me impossible to decide this question, which happily is not so important as the examination of the previous questions.

CHAPTER IX.

ORGANS OF RESPIRATION.

Epiglottis; Glottis; Larynx; Trachea; Lungs and Pleuræ.

ARTICLE I.

EPIGLOTTIS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

THIS organ, which is almost always neglected, is, nevertheless, as worthy of attention as the greater part of those which we have examined previously, and in a certain view merits perhaps more.

In two cases, in which a false membrane had been effused upon the pharynx, and had extended afterwards rapidly to the larynx, the epiglottis was covered by it and its substance thickened (Obs. 20, 31); it presented, in a third a red but not ulcerated spot on its lower face (Obs. 22), and in seven more (Obs. 7, 15, 21, 24, 30, 32, 45), I found it more or less

thickened, red at its edges, and destroyed through its whole thickness either at its summit, or on one or both sides, generally both, to the length of two or three lines, and to half the breadth, so that the fibro-cartilage was not only exposed but was like the mucous membrane destroyed. This last, a little thicker in this point than any where else, was separated from the subjacent parts in some cases for the space of a line.

This partial destruction coincided with ulcerations of the pharynx in three subjects (Obs. 24, 32, 45), two [one?] of which had the same lesion in the œsophagus (Obs. 32), and a third in the stomach. I will now relate this last case.*

TWENTY-FOURTH OBSERVATION.

Pains in the abdomen, anorexia, thirst at the commencement; considerable diarrhoea on fifteenth day; violent delirium on twenty-second; death on *twenty-fifth day*. Cervical glands, enlarged and red; ulceration of the pharynx; partial destruction of the epiglottis; numerous elliptical patches in the ileum, red, enlarged, ulcerated; mesenteric glands, corresponding to them, enlarged, red and softened; ulcerations of the stomach, &c.

A MASON, æt. 23, medium size and generally in good health, was admitted into the hospital of La Charité, August 15th, 1825. He had been at Paris six months, complained of having been sick twenty-two days, and had been confined to the bed during fifteen. The affection had commenced with pains in the abdomen, anorexia, thirst, and diarrhoea supervened at the end of the first two weeks, and from that time the patient

* We find at times at an autopsy the form of the epiglottis altered at its upper part; it is square and not rounded as it usually is, and perhaps this condition, which appears congenital at the first glance, is only a consequence of the destruction of this part in those who have had typhus fever. — LOUIS.

had always had from twelve to fifteen dejections during the twenty-four hours. Twice leeches had been applied to the epigastrium.

He appeared perfectly rational when brought to the hospital, but violent delirium came on and patient uttered loud cries, ran about the ward with little clothing upon him during the following night, so that recourse was had to the straight jacket.

On 16th, face rather bright ; answers, prompt and correct upon many subjects, so that the few details, which I have given above and which I obtained from the patient, corresponded with the account given me by the relations. But in other respects he had complete delirium ; patient thought himself at the house of his master, and it was with difficulty that he was induced to believe that he was at the hospital ; slight headache ; trembling of limbs when standing ; tongue, red and dry, coated thickly at centre ; thirst, great ; deglutition, easy ; abdomen, meteorised, supple throughout, and on its surface were some rose colored lenticular spots ; it was not painful on pressure ; three brownish dejections ; pulse, trembling, regular, at ninety-nine ; respiration, somewhat quickened ; respiratory murmur, mixed with a mucous or very abundant sonorous râle.

(Barley water sweetened with honey, twice ; riz. sirop. tart ; blisters to legs.)

A short time after visit, very noisy delirium, loquacity, loud cries, so that recourse was again had to the straight jacket.

During the day, involuntary dejections and continuation of the delirium. On 17th, at the hour of visit, the delirium had continued upon the same subject for many hours ; patient spoke only of robbers whom he saw about him, &c. &c. ; his pulse was extremely small, vacillating, at a hundred and forty.

The delirium continued, was somewhat less during this day than on the previous one, but the patient striving frequently to get out of bed was retained there by means of a straight jacket. On 18th, he made continual efforts to free himself; the conjunctivæ were somewhat injected; the tongue and the teeth were blackish and slightly coated; the pulse was a hundred and sixty, the pulsations of the heart were confused, and it was impossible to count them, in consequence of the respiratory murmur. Death at eight, P. M.

Opening of the corpse nineteen hours after death.

EXTERIOR. — No white or red stripes on the lateral or anterior parts of body; moderate stiffness of frame, which was completely cold.

HEAD. — Superior cerebral *veins* slightly distended with blood. Slight effusion under the *arachnoid*, confined to the spaces between the convolutions; a spoonful of clear serous fluid in each one of the lateral *ventricles*; two and a half in the lower occipital fossæ. *Pia mater*, slightly injected; *cortical substance*, of a pale rose color; *medullary* had some red points in it; both were of a good consistence.

NECK. — *Cervical glands*, enlarged, red, not softened. *Pharynx*, of a light red color, and at right, below the amygdala, was an irregular ulceration one inch long, a half inch broad, caused by the destruction of the mucous membrane of the same part. The *epiglottis* was thickened, was more or less red and ulcerated upon its sides, for about a line in breadth, and of a height nearly three times as great, so that its fibro-cartilage and mucous membrane where ulcerated had sharply marked edges. The *larynx* was in a healthy state, the *trachea*, of a bright red color in its lower half.

CHEST. — *Heart*, of a medium size, nearly as firm as usual, and containing only a few drops of blood. *Aorta*, perfectly healthy, except that it had a pale rose tint in its first half, which disappeared after it had been macerated a few minutes. Some cellular adhesions between the left lung and the corresponding *pleura*; five ounces of bloody serous fluid in this side and the other. The *lungs* had, especially at their lower part, posteriorly and on the sides, a deep blackish red color, which extended about an inch deep into the substance of the organ. Incisions made in this part were covered immediately with a thin layer of red liquid, not frothy; pressure forced out but little of the same liquid. The pulmonary tissue was not granulated in any point, and was more firm than usual. Moreover, the lungs were soft, of a bright red color, without any trace of the first stage of inflammation. In the right, moreover, there was interlobular emphysema over the space of about four inches, which was very marked at its anterior part, and principally about the parts which were adherent, where the lobules were three or four lines distant from one another.

ABDOMEN. — *Æsophagus*, perfectly healthy. *Stomach*, of medium size, and containing a small quantity of yellow, turbid, thick liquid. Its mucous membrane was yellowish in the great cul-de-sac, greyish in other parts. It presented near the pylorus five ulcerations about a line in diameter, was of good consistence, so that it gave strips from six to seven lines along the great curvature, and somewhat longer in other parts except the great cul-de-sac. The *duodenum* was greyish but otherwise was natural. The *small intestine* was distended with gases in its first fifth and contained twenty-five lumbrici from six to nine inches long. Its mucous membrane was pale or slightly shaded with grey in its first three quarters, it was of a slightly livid red color afterwards; it was thin and soft-

ened through its whole extent ; it gave strips about four lines long in its first third ; afterwards gradually less long, so that in the last third it had very nearly the consistence of mucus. The *elliptical patches* were very apparent, were marked with grey points, were a little thicker than natural in the second quarter ; in the next quarter they were more or less seriously altered, had rather a vivid red color, were evidently prominent above the adjacent parts in consequence of the thickening of the softened mucous membrane which could still be raised in strips, but especially because of the thickening of the submucous cellular tissue, which was red, greyish, firm and not infiltrated. In the last quarter the patches, twenty in number, and all of them more or less largely ulcerated, became larger, and at the same time nearer one another in proportion to their proximity to the cæcum, at which latter place five of them were more deeply ulcerated than the others, for the muscular coat was exposed, which last had not undergone any change. The mucous membrane alone was largely destroyed over the others, on some of which was a commencing destruction of the submucous cellular tissue, over a small extent of surface. This tissue was about three quarters of a line thick, and in those parts where there was commencement of ulceration, it was of a yellowish color in consequence of the bile ; it had a bright red color every where else, and in many points a certain degree of friability, and this last peculiarity was found in parts which were covered by the mucous membrane partially destroyed, and in some which were entirely exposed. Between the elliptical patches were found others of an irregular shape, and not nearly so large, from four to five lines in their greatest dimensions, flattened, and half of a line thick, of the same structure as the elliptical patches which were not ulcerated. Some solitary, flattened, whitish crypts

were seen in the last three feet of the ileum. The *large intestine* was distended with flatus, and contained a moderate quantity of pultaceous faecal matter. Its mucous membrane was reddish and bluish in the cæcum, pale and greyish afterwards; it was softened in the first part so as not to give strips. It gave strips, however, from three to four lines long in the following half; afterwards, from twelve to fifteen; it was of its usual healthy thickness without crypts or ulcerations. The *mesenteric glands* were pale and of medium size in the first half of the mesentery, afterwards they were redder, soft and enlarged, especially near the cæcum where they were as large as hazel-nuts, and in one of them was a little cavity containing pus. The *liver* was pale and flabby; its cohesion and size were natural, the bile was yellowish, turbid, not thick and small in quantity. The *spleen* was obliquely situated in order to accommodate itself to the diaphragm; it was seven inches high and proportionably broad; it was firmer and more difficult to penetrate than usual, which originated from the increased thickness and consistence of the filamentous tissue, which enters into its composition; for the scalpel when passed over the incisions which were made was more easily covered by a pultaceous matter than is natural. The other *viscera* presented nothing remarkable.

If there are cases in which the ulcerations of the mucous membranes are more numerous than in the preceding case, still this last is a very remarkable example of the tendency there is to ulceration in persons laboring under the typhoid affection; for besides the large and serious ulcerations of the small intestine, some were likewise found in the stomach and pharynx. The condition of the epiglottis was remarkable in this case, as in others similar, inasmuch as the ulceration did

not affect simply the mucous membrane, but likewise had attacked the fibro-cartilage which, from its very different kind of vitality, it seems to me should have ulcerated much more slowly. Moreover, as is usual, there was no symptom marking this lesion which, as we shall remark hereafter, probably arises at a period some time after the commencement of the disease, and doubtless often during the course of the delirium.

I will not now enlarge upon the ulceration of the pharynx below one of the amygdalæ, I merely would remark that ulcerations of this kind often take place in those persons who are cured,* and that in consequence of their being connected in some cases with partial destruction of the epiglottis, we must suppose that this last takes place in many of those who are eventually cured.

The lesions of the small intestine presented no appearances which had not previously been seen, they had followed their usual course, the elliptical patches having been larger and more deeply ulcerated in the cæcum than any where else. The softening of the mucous membrane of the colon was less extensive and less serious than that of the mucous membrane of the small intestine ; ulcers were found in this last only, so that it would be difficult to doubt that the change in the elliptical patches of the ileum was the sole cause of the diarrhœa at the beginning. I would remark, moreover, that the first symptoms indicated the intestinal canal as the seat of the disease.

Like ulcerations of the pharynx and œsophagus the destruction of the epiglottis was found in those persons alone who died after the fifteenth day of disease. The examples of it are as follows,

* I have met with these ulcers in a fifth part of those patients affected with severe typhus fever, in whom I examined the back parts of the mouth.
— LOUIS.

2	"	7	"	"	second series,
4	"	20	"	"	third "
1	"	8	"	"	fourth "

We see from this table that, like most of the lesions previously described, this one was much less frequently observed in individuals who died late than in those who fell victims to the disease at an earlier period.

Finally, in one case in which there was no alteration of the epiglottis in a patient who died on the twenty-fifth day of disease, its ligaments were one line thick. (Obs. 19).

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The epiglottis was rarely diseased. Three times only I found it more or less reddened and thickened at its edge in individuals who died of variola, measles and pneumonia. An extremely soft false membrane covered it in a patient who died of this last disease. In another case the fibro-cartilage at one edge was exposed over the space of four lines, but without any appreciable loss of substance, and the mucous membrane around was separated from the subjacent parts for about one line; it was a little red and thickened in this point especially, but appeared otherwise healthy, and to have been merely divided.

But supposing, contrary to appearances, that there was really a commencement of ulceration, this destruction would not be less rarely found in patients who died of acute diseases other than typhoid, and the proportion of cases in which I observed it in both would be as one to fourteen; the number of persons who died of the first diseases being nearly double in number those who died of the second. Therefore we must consider *ulceration, or partial destruction of the epiglottis as*

one of the *secondary* anatomical characteristics of the typhoid affection, as we have already decided that ulcerations of the pharynx and œsophagus are ; and that this lesion observed in a patient who should die of any acute affection proves almost to a certainty, without need of further examination, that the patient died of typhoid fever.

This new fact is still more remarkable, as it would seem when reasoning *a priori*, that all affections of the air passages must be more frequent in those who died of pneumonia than in those dying of other diseases, because of the connection between the organ primitively affected (the lung) and the air passages.

ARTICLE II.

GLOTTIS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

It was somewhat contracted and œdematous in two patients ; it was about two lines thick at its edges in one of them (Obs. 1), and was somewhat less in the other (Obs. 31).

The first died on the twentieth day in a sudden and unexpected manner, without having experienced any symptoms of œdema of the glottis. The aperture of this was about two lines in diameter ; its circumference was wrinkled as the hands become after having been retained in water some time, or like a membrane which has been previously distended with a fluid, and which after the incomplete disappearance of the effusion has not entirely recovered its tone. The lateral folds of the glottis contained some effused fluid as its circumference did.

Excepting a softening of a red color, and over a small extent of the mucous membrane, the larynx presented no remarkable

appearance in this last patient which could explain the œdema of the glottis. In the other a thin false membrane was found in the air passages.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

Œdema of the glottis was found in a degree but little less than that which I have described above in two cases of pneumonia and of softening of the brain, in patients who died on the eighth and ninth days of disease. And as there was hepatization of one of the lungs in the case of softening of the brain, we may say that these two were cases of pneumonia.

These two facts, apparently of so little value, are nevertheless worthy of attention, since they show in a special manner the importance of partial destruction of the epiglottis in the course of typhoid fever; for in this last this affection occurred seven times oftener than in pneumonia, supposing I did observe it in this last; but œdema of the glottis was not more frequent in one than the other of these diseases.

The lateral folds of the epiglottis and not the edge of the glottis were wrinkled in one case of pneumonia.

ARTICLE III.

LARYNX.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The mucous membrane of the larynx was natural in nearly all the patients, blackish and softened over a very small space above the vocal chords in one of them; of a more or less vivid or dark red, and covered with a false membrane which lined likewise the pharynx in three others, one of which had in a very remarkable degree the principal symptoms of croup.

(Obs. 20). These three patients died the fourteenth, sixteenth and twenty-second days of disease.

In one case in which death took place after three weeks of disease, there was a superficial ulceration one line in diameter between the arytenoid cartilages (Obs. 21).

If one of the patients who died on the fourteenth day was attacked with croup, the patient, who was the only one in whom there was ulceration of the larynx, died at a more advanced period, on the twenty-second day ; therefore, every fact seems to prove that ulceration, contrary to all other lesions, not even excepting softening with diminution of thickness and destruction of the mucous membrane of the stomach, appears at a somewhat advanced period of the disease.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The larynx presented the same lesions as in the typhoid affection, there was a difference only in proportion and degree, and this difference was considerable. Thus in three individuals, two of whom died of pneumonia and one of variola, the larynx presented traces only of false membrane, that is to say, it was not covered, by any means, entirely by this effusion, and it was not found either above or below it. There was in a fourth case a kind of mucus of a membranous form at the lower part of the larynx and superior part of the trachea.

These facts, notwithstanding they may seem to be of little moment, indicate almost to a certainty, the influence pneumonia has upon lesions of the larynx. The following is a new proof of it ; I refer to two small ulcerations at the base of the arytenoid cartilages in a patient who died on the fifteenth day of a pneumonia, the sole fact of the kind which I found in these cases.

ARTICLE IV.

TRACHEA.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The mucous membrane was of a pale or bright red in a certain number of subjects, was sometimes greenish, and at others of natural color, but it had its natural degree of consistence and thickness in all the cases save one in which I found it a little thickened below the larynx over a small space. It had nothing remarkable in its appearance in two other cases in which it was covered over a small space with a false membrane. In none have I found the smallest ulceration.

The redness of the mucous membrane of the trachea being accompanied by neither softening nor thickening must be considered, as it seems to me, at least in nearly all the cases, as caused by simple congestion, or a slight inflammatory affection, doubtless of very recent date at the time of the death of the patients. These views are confirmed by what I have previously stated, viz., that this mucous membrane was not ulcerated in a single one of these cases, whilst all or nearly all the other mucous membranes were more or less thickened, reddened and softened, and a certain number of times were ulcerated in patients who died of typhoid fever.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

After these diseases, at least after pneumonia, the mucous membrane of the trachea was oftener red, and of a deeper red likewise, than in patients who died of the typhoid affection. But except two cases of pneumonia, in which I found it evidently thickened in one part, it was altered in color merely.

ARTICLE V.

LUNGS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

These organs, which it is so rare to find in a natural state, whatever may be the cause of death, were more or less seriously affected in the greater part of the patients.

1st. In fifteen cases, however, (nearly one third part), either they were healthy, or their morbid changes were slight, of small extent, and consisted especially in a change of color. This color was generally a violet red at the posterior part of the lungs, especially in their lower lobes. It presented the appearance of longer or smaller patches externally, and internally that of rounded spots some lines in diameter, which extended generally into the adjacent parts of the organ which were redder than natural. The patches were a half-inch, more or less, in thickness, and in this point as well as in those where the internal spots were, the pulmonary parenchyma was, in many cases, a little firmer than in the surrounding parts, but it had not lost entirely its suppleness, and did not contain an excess of blood.

In six of the fifteen subjects of which we are now treating, there were no evident spots; the color of the lungs being merely a little darker behind than in other parts of them.

These fifteen cases were found in the different series as follows ;

4	out of 10	of the first series,
3	"	7 " second "
5	"	20 " third "
3	"	9 " fourth "

That is to say, the lungs were healthy or nearly so in a little less than half of the patients who died between the eighth and twentieth days of the disease, and a little less than a fourth part of those who died after this epoch.

2d. In two other cases which it will not be proper to arrange with the preceding, nor with those of which we shall speak soon, the lungs, although preserving their rounded form, cre-pitated like cellular membrane which is emphysematous. They contained more blood and were heavier than usual in one of the patients who died on the ninth day of the disease (Obs. 10) ; they were light and more easily torn than is usual in another who died after twenty-two days of disease (Obs. 7).

3d. That condition of the lungs, which, for want of a better term, I shall, like the majority of physicians, call hepatization [splenification ?] or carnification, was found in nineteen cases, complicated with slight congestion, a degree of the first stage of inflammation, or hepatization in seven of them. It generally occupied merely the lower lobe of one of the lungs, or two at the same time in some subjects ; it extended upwards, but never invaded completely either one or the other, so that the anterior part of the lungs presented generally the softness and color which are natural to it.

The part which was carnified or splenified was of a deep bluish red color ; it had lost the suppleness which belongs to pulmonary tissue, was heavy and generally sank in water. Then the pulmonary tissue was entirely deprived of air, and if incisions were made in it, a great quantity of red thick liquid, containing no air, flowed from it. When this liquid was wiped off, another stratum was easily made to flow by means of pressure, and after having thus pressed out all the fluid from the diseased parenchyma, we could discover no better than before either the healthy structure of the lungs or the granu-

lated aspect of hepatization ; it preserved, likewise, rather a deep red color in the greater part of the cases, was more resistant than usual, and the finger was able to penetrate its substance only with great difficulty.

Although in this condition it was impossible to recognise the texture of the lungs, their vessels, however, were still distinct in a great number of cases, were more or less gaping, and it was especially under these circumstances that the incisions made into the part splenified were covered quickly by a more or less thick stratum of red and rather dense liquid.

We see in how many different essential points this lesion differed from that which is the consequence of acute inflammation of the lungs. 1st, it was limited to the posterior part, and ordinarily to the lowest part, and never was found at the upper part as is the case so frequently in inflammation ; 2d, its color was very different from lungs in the first or second stage of inflammation ; 3d, the tissue which was the seat of it had nearly always more cohesion than usual, so that I found it softened only in one single case in which it contained a little air (Obs. 12), which is different from what is observed in hepatization ; 4th, the liquid which flowed on an incision being made resembled not at all that which flows from the lungs either in the first or second stages of inflammation ; 5th, when there were in the same organ some parts splenified and others hepatized, they were very distinct and generally more or less distant from one another, so that I never found any granulated spots in a part which was splenified save in one case (Obs. 3) ; 6th, finally, in two cases which presented this lesion in a remarkable degree at the lower part of the right lung, its exterior was rough and mamelonated as it were in a regular manner, and this I never observed in any case of inflammation of the pulmonary parenchyma (Obs. 26, 32).

I tried to determine whether there was any relation between the condition of the heart and that of the lungs which were more or less largely splenified, whether the splenification of the one might not correspond with softening of the other, and I found that this coincidence did not occur oftener than the reverse.

Whether simple or complicated with partial inflammation of the lung either in the first or second degree, the splenification existed in

	4	out of 10	patients of the first series,		
2	"	7	"	"	second "
11	"	20	"	"	third "
3	"	9	"	"	fourth "

So that, although this morbid change was found in the lowest part of the lungs, it is impossible to say that the position of the body had much effect in producing it, inasmuch as those patients who died late in the disease presented it in a less degree than those who died earlier. And this conclusion must appear much more just, as splenification did not follow a very different course from that followed by the majority of the other lesions, in the production of which, however, the position of the body did not appear to have any influence.

4th. Inflammation of the pulmonary parenchyma to the first or second stage, was found in seventeen subjects, some of whom had likewise the lesion which we have just been studying. This inflammation was nearly always limited to a small part of the lung.

Congestion or the first stage did not occupy a large part in any case; it was generally continuous, but sometimes it was found in different parts, as if lobular (Obs. 42). Hepatization, which presented less frequently this appearance,

was found often at the apex of the lungs, of which it occupied almost wholly both lobes in three cases (Obs. 18, 21, 30).

A fact worthy of attention, because it supports what I have previously stated in regard to the difference between splenification and inflammation of the pulmonary tissue, is this, viz. that inflammation was in inverse proportion to the splenification, and was found in the first or second degree in

2 out of 10 patients of the first series,

2 " 7 " " second "

7 " 20 " " third "

6 " 9 " " fourth "

And among the last were three cases in which the hepatization had extended over a great surface.

One of these cases presented the following remarkable circumstances. In the middle of the upper part of the right lung, where it was hepatized, were fifteen small cavities containing pus of a good quality. Similar abscesses, surrounded by merely a very small stratum of hepatization, were found a little lower in the same lobe (Obs. 21.)

5th. In another subject, I found in the midst of healthy pulmonary parenchyma a tumor about an inch in diameter, formed of a filamentous substance, which at one point was connected with the lungs. In the centre of this tumor was a reddish, pulpy substance as it were, the whole being surrounded by a lamina of yellowish pus, which was rather thin and confined in a false membrane of the same color. This last was likewise resting upon another which was firmer, was greyish, about one quarter of a millimeter thick* and adherent to the healthy pulmonary texture. As I have already stated, the

* Vide second note, page 9. — H. I. B.

nature of this tumor, in the production of which, nevertheless, inflammation played a certain part, is not easily determined upon in the actual state of science (Obs. 16).

6th. Finally, I found some semi-transparent granulations, very minute generally, more or less numerous in four subjects, and in another a crude tubercle at the apex of the upper lobe of the right lung. This case and three others relate to subjects in whom the pulmonary parenchyma was otherwise perfectly healthy (Obs. 17, 34, 43, 44), who had all died at an advanced period of the disease, from the twenty-fifth to the forty-sixth day, and this fact would rather make us incline to the belief that in a certain number of subjects at least, these granulations arose after the disease began, and were excited by it, otherwise it would be difficult to understand why no subject, who died between the eighth and twentieth days of disease, should not have presented the slightest traces of them. It is proper, moreover, to remark that, save in one case of which we shall soon speak, in not one of these cases did the mucous membrane of the bronchia present any evident morbid change.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

Among these patients, whose number is reduced to thirty-five, inasmuch as we cannot make use of those cases in which the patients died of pneumonia or pleurisy, the lungs were as follows,

1st. They were natural in twelve or somewhat less than a third. At the posterior part of some was a bluish or reddish brown color, and coinciding with this was a slight increase of consistence and weight of the organ in this point.

2d. In two patients who died of peritonitis and variola on the fifth and sixteenth days of disease the pulmonary parenchyma,

without presenting any other morbid change than that already spoken of, crepitated in nearly its whole extent. In another case of variola it had much less cohesive power, was more easily torn than usual, although it presented no trace of inflammation.

3d. The condition designated by the term splenification was found in eight patients ; generally it was less advanced in degree and over a less extent of surface than after the typhoid affection, but it had no other remarkable difference. One of these cases is remarkable as having occurred in a man who died in an unexpected manner in a few hours, during convalescence from a slight acute disease, and as he had experienced no symptoms to be referred to the chest at the time he was taken with the formidable symptoms in the midst of which he died, we must conclude that the patches which were splenified, had become so in a very short time, a few hours, and that, as I have already observed, the tendency of fluid to take the lowest part had probably but very little influence in the development of the morbid change we are now speaking of. Splenification was observed in another case, but to a less degree.

Moreover, in this case as in the subjects who died of the typhoid affections, we found no proportion existing between the condition of the heart and that of the lungs, and when there were hepatization and splenification in the same organ they were very distant and not mingled at all.

4th. Inflammation was observed in fourteen cases, either simple or complicated with the condition given previously ; it was in eight to the second degree, sometimes at the apex, at others at the base of the organ.

The great number of examples of hepatization in the cases where the re-action was not always very great, (since among

them are cases of apoplexy and softening of the brain,) is explained by the fact that a majority of the subjects who had it died during the winter.

5th. And as if the analogy must hold good in every point between these cases and those of the typhoid affection, grey, semi-transparent granulations or tubercles were found in the lungs of five subjects. And another contained tumors more or less of an inflammatory character, similar to that previously described.

ARTICLE VI.

BRONCHIA.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The bronchia contained in a great number of cases a small quantity of thin mucus, of a bright red color, which color doubtless arose during the last days of life, since the patients had not expectorated any thing similar for some days before death, and probably at the period at which the serous fluid of the pleuræ, or the mucus of the intestines, of which we have already spoken, becomes red. In one case I found the mucus at the extremities of the bronchia perfectly puriform in a patient whose lungs presented a great number of miliary granulations, and in whom the mucous membrane of the bronchia was in a morbid condition, and was somewhat thickened in some parts. This membrane was quite often of a vivid red color in other subjects, especially near the origin of the bronchia.

The size of the bronchia was augmented in three cases; throughout nearly the whole of one lung in two subjects (Obs.

5, 34 ;) at the extremities of some of their ramifications in a third.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The condition of the bronchia did not differ in these cases sensibly from that described already, and in three cases they presented partial dilatations at their extremities. In addition to the dilatation, a thickening of the mucous membrane was observed in one case.

ARTICLE VII.

PLEURÆ.

Adhesions, False Membranes; Effusions into their Cavities.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

SEC. 1. — Adhesions and False Membranes.

Notwithstanding their youth the patients who died of the typhoid affection had frequently adhesions of the lungs to the pleuræ; in fact, I met with them nineteen times in the forty-six cases which we are studying. They were generally limited to one of the lungs and to a small part of its surface, at the apex, base, or posterior part, but they occupied the whole extent of the lungs in five cases, and in a sixth there were universal adhesions of both lungs. In those cases in which there were not perfect adhesions, save on one side, still the other lung had adhesions over a certain space.

I found no traces of recent inflammation of the pleuræ save in two subjects. One who died on the twenty-eighth day of the disease and had a small part of the lungs splenified, or in the first stage of inflammation, and the right pleura was covered in some parts with portions of a soft false membrane without the least effusion (Obs. 39). The other, on the contrary,

had a considerable effusion, and in the liquid some membranous flocculi were floating. This patient died on the forty-third day of the disease.

Connecting this result with those I have spoken of in my *Researches upon Phthisis*, we see that acute inflammation of the pleura is rather less frequent in those who died of the typhoid affection than in those who died of chronic diseases.

SEC. 2. — Effusion of fluid into the cavities of the Pleuræ.

Effusion of fluid into the cavity of the pleura was observed in nineteen subjects, and always on both sides, with the exception of one case in which there were universal cellular adhesions; the fluid was always of a reddish color. And although this color was often bright, I observed traces of a sediment of the same color in one only of these subjects (Obs. 12).

The quantity of effusion varied from three to thirty ounces, and there was more than a pound in both pleuræ in four subjects, one of whom died on the eighth day of the disease (Obs. 12), two on the twenty-first and twenty-second; the fourth after forty-three days of disease. When less in quantity than this, it was proportionably more common in patients who died between the eighth and twentieth days of disease than in those who died later; very nearly in the proportion of four to three.

As to the cause of these effusions, one would be induced, if we remember its extreme infrequency in the pericardium and peritoneum, to seek for it less in the change in the blood which, nevertheless, was frequent in these subjects than in the obstacle caused to the pulmonary circulation by splenification and inflammation of a part of the parenchyma of the lungs, still more because these lesions were not found in all the cases of effusion and reciprocally. The change in the blood was

frequent, since softening of the heart, which we meet with it most generally, took place in fifteen out of nineteen of the cases which we are studying.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The pleuræ differed but little in these cases from what has been previously described.

1st. Cellular adhesions were found in a great number of cases, or in twenty-five out of thirty-six patients in whom the pleuræ were described with care, and they were more common than among those who died of the typhoid disease, and difference of age readily explains this. But general adhesions were found in five cases only, or very nearly in the same proportion as in those who had died of this last disease.

In three subjects attacked with inflammation of the peritoneum, of the womb, or with dysentery, there were traces of recent pleurisy, or some flocculi of a false membrane upon both pleuræ, with or without effusion of the serous fluid.

2d. This last lesion was found in sixteen cases, nearly half of these patients we are now examining, and the effusion was of a more or less red color in fourteen subjects, the majority of whom presented the same lesions of the pulmonary parenchyma and of the blood, as those did who died of the typhoid affection.

The quantity of the effusion did not, moreover, vary less than in these last, and was more than a pound in quantity in four cases.

CHAPTER X.

CONTENTS OF THE CRANIUM.

Nearly all the organs about which we have previously studied, those even whose functions were not seriously altered during life, presented at the autopsy lesions more or less grave and numerous. The brain, whose functions were very seriously disturbed in nearly all the cases of typhoid affection, merits our greatest attention. Let us commence with an examination of the membranes covering it.

ARTICLE I.

ARACHNOID.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

Three subjects had from two to three spoonfuls of very clear serous fluid in the upper part of the arachnoid. The effusion was turbid but not in greater quantity in a fourth case in which were found some albuminous flocculi adhering to the fold of the arachnoid which covers the brain. In a fifth, a still softer, but otherwise similar false membrane covered the internal face of the dura mater at its upper part.

The effusion of limpid serous fluid took place in individuals who died after the twentieth day of disease; the false membranes in subjects who died on the twenty-second and forty-third day (Obs. 17, 25).

In both, the arachnoid had not lost the tenuity and translucency which are peculiar to it.

This last fact, it appears natural to present to the reader in this portion of my work; I will, therefore, give it now in detail.

TWENTY-FIFTH OBSERVATION.

Chills, cephalalgia, anorexia, and pains in the abdomen in the beginning ; diarrhoea on the third day, and soon delirium ; drowsiness ; meteorism ; considerable and involuntary diarrhoea, and death on *twenty-second day*. Eschar on the sacrum ; very soft false membrane upon the arachnoid covering the cerebrum ; patches of the ileum ulcerated ; mesenteric glands, corresponding to them, of a purplish color, enlarged and softened, &c.

A HATTER, æt. 18, of medium size, strong constitution and body not fully grown, having been at Paris one month and ill six days, was admitted to the hospital of La Charité, Dec. 4th, 1822.

The disease had commenced without any known cause, in the evening, with a chill, soon followed by heat, headache, pricking in eyes, sensations as of being dazzled, pains at epigastrium and in the rest of the abdomen. Nausea supervened on the next morning and ceased three days afterwards, in consequence of an emetic which produced many discharges of bile from the stomach and rectum. The other symptoms continued the same ; there were a slight cough and two or three liquid dejections in twenty-four hours, from the day on which the emetic was administered.

4th. General aspect of face, natural ; position in bed sufficiently so ; mind and memory, perfect ; dull headache ; pricking sensations in eyes without redness of them ; patient felt dazzled when he rose in bed ; pains in limbs ; thirst, very great ; tongue, natural ; sense of weight at epigastrium ; dull pain in course of transverse colon ; the whole abdomen was more sensible than natural to pressure and slightly meteorised ; hypochondria, supple ; skin rather hot, no sweat ; pulse, regular, at eighty-five ; cough, extremely rare ; some greyish

and yellowish sputa, some of which were streaked with blood ; respiration, but little accelerated ; no râle heard.

(Sweetened barleywater ; emollient enema, twice).

5th. Slight appearance of stupor, but mind still clear ; increased feebleness ; tongue, dry in centre, moist and red at edges ; frequent colic pains ; numerous dejections ; pulse, large, full, rather inclined to a double beat ; skin, rather hot ; respiration, more difficult than before.

(Fifteen leeches to anus ; emollient fomentations on the abdomen ; sweetened barley water ; viol. ed. ; gum potion ; emollient enema.)

From 5th to 9th, no nausea, but the dejections were frequent, from twenty to thirty a day ; abdomen, not pained by pressure, except on 9th, when patient felt some pains in his epigastrium ; his tongue was moist, more or less red at edges, and greyish at centre ; the pulse had a slight double beat, seventy-eight on 7th, ninety-one on 8th, and without peculiar character ; cough, infrequent ; respiration, without râle ; features still nearly natural. Rose colored lenticular spots were numerous from the 6th over the abdomen, and especially over the anterior part of the chest.

On 9th, during the day, some epistaxis and a slight derangement of ideas ; the dejections were still rather numerous, and on the next day I found the rose spots larger, and the lips thickly crusted ; the condition of the tongue as before.

(Rice-water acidulated with muriatic acid ; gum potion ; emollient enema ; two blisters to legs).

From this time until 21st, the day of his death, the exercise of his intellectual faculties became more and more difficult ; the drowsiness was nearly constant and considerable in degree from the 12th. The delirium was calm, more frequent during the night than the day, and on the night of 16th to 17th the

patient was much agitated, tried for the first time to get out of bed, which he repeated several times on the succeeding days. The hearing became dull, and it was so on 16th to such a degree that the patient himself observed it, although inclined to drowsiness. The weakness increased very rapidly, and on 15th an eschar was observed upon the sacrum. This eschar was observed to be on 18th two inches and a half large, and from that time the face became more and more pale. The tongue, dry, thickly coated on 13th, had always the same aspect afterwards. The dejections, numerous and sometimes involuntary during the day of 12th, had almost always the same character, and were less frequent after the 15th. The abdomen was a little meteorised and painful on 14th ; the pulse, from ninety to a hundred from 10th to 17th, was at a hundred and two afterwards ; skin was moderately hot, no sweat. The cough was not frequent. There was always a little dry, sonorous râle, chiefly at the right.

At eight, A. M. on 21st ; extreme sinking of features ; pupils, somewhat larger than natural ; somnolency. At eleven, face was of a crimson hue, head tossed from side to side. Death at three, P. M.

The rice water acidulated with muriatic acid was continued ; a blister was applied on 14th to the chest. On 16th, was ordered a cold infusion of cinchona besides the ordinary ptisan, and an enema of camomile tea ; on 18th, a drachm and a half of the extract of cinchona in a gum potion and an enema of camphorated cinchona.

Opening of the corpse seventeen hours after death.

EXTERIOR. — Considerable emaciation. No red or purplish stripes as from blows with rods upon the anterior part or sides of chest.

HEAD. — Two small spoonfuls of turbid serous fluid in the upper part of the *arachnoid* ; yellowish, albuminous flocculi in the occipital region of the same cavity on each side of the falx. Below, as throughout the remainder of its surface, the arachnoid was smooth, polished, thin and not injected, but was natural. A small spoonful of serous fluid in each of the lateral *ventricles*. *Medullary* substance of the brain, firm, not injected.

CHEST. — No effusion of serous fluid into the *pleuræ*. *Lungs*, free from adhesions ; the left was a little red and contained a greater quantity of blood than usual ; the right was slightly congested at its apex ; of a purplish color in its lower two thirds, behind and internally where there were some blackish spots resting upon a more or less red part ; the lung was not granulated, but was splenified as it were ; at its anterior portion it was healthy. *Pericardium* and *heart*, natural.

ABDOMEN. — *Stomach*, of a small size, hidden in the left hypochondrium, and containing a small quantity of greyish, brownish fluid. Its mucous membrane was nearly of a natural color in the great cul-de-sac ; but in its pyloric portion, where it was covered with a moderate portion of mucus, it had a rosy hue on which were spots of a somewhat deep red color ; and in other parts the stomach was healthy. The *duodenum* was natural. The *small intestine* contained a moderate quantity of mucus. Its internal membrane was generally white ; of an orange yellow near the duodenum, of a good consistence throughout, even between the *elliptical patches*, which were more or less changed near the cæcum. These patches occupied the space of two and a half to three feet ; they were numerous ; some were ulcerated, others not so. These last were farthest from the cæcum, they were red, more or less prominent, and composed of the mucous membrane which was softened and thickened, and of the submucous cellular

tissue, which was somewhat less red than the mucous. This last was completely destroyed over the patches which were ulcerated, and it was the same with the submucous cellular coat in the centre of one of the ulcers where the muscular fibres had been laid bare and were but slightly altered. Besides this, near the ileo-cæcal valve, for the space of three inches, or throughout nearly the whole circumference of the intestine, the mucous membrane was red and swollen by the enlargement of the small patches, which occupy this part of the alimentary canal, and five of which were ulcerated, all having undergone the same change as the patches had. The *large intestine* was meteorised ; its mucous membrane was a little thickened and slightly softened, and throughout its whole length there was seen a great number of flattened lenticular crypts slightly ulcerated, or having a black point at their centres. The *mesenteric glands* were of a purplish color, were softened and very much enlarged near the cæcum ; they were a little larger than natural in the part of the mesentery corresponding to the patches which were not diseased ; the other lymphatic glands were healthy. The *liver* presented no remarkable appearance ; the bile of the *gall-bladder* was somewhat copious and of a beautiful mahogany color. The *spleen* had nearly a livid hue ; was of a good consistence and of double its usual size.

If the softness of the false membrane effused upon the cerebral arachnoid, shows, beyond doubt, that it was very recent at the death of the patient, and that we cannot consider it as the cause of the delirium and drowsiness which the patient experienced so long before death, it is, however, of not less importance, inasmuch as it would be difficult, without it, to explain satisfactorily the occurrence of death from the con-

dition of the organs. Except a slight change of color the mucous membrane of the stomach was, in fact, natural. Such was, likewise, very nearly the case with the small intestine with the exception of the elliptical patches in the three feet nearest the cæcum; that of the large intestine was little changed; the eschar on the sacrum could not have caused death, so rapidly and as much may be said of the state of the lungs. But add to all these lesions that of the arachnoid, and death is easily explained.

The affection followed its usual course, the first symptoms marking disease in the alimentary canal, as the morbid changes of the elliptical patches of the ileum, being the gravest and most important of all those found, were doubtless the first in commencement, and they were likewise more marked near the cæcum than elsewhere. Although the diarrhœa was very great, the mucous membrane of the colon presented no evident traces of inflammation, inasmuch as the thickening may be considered as the consequence of the reaction occasioned by the meteorism; so that the alteration of the patches of the small intestine was doubtless in a great measure the cause of the abundance of the alvine discharges.

The arachnoid was more or less opaque at its upper part in four cases in which there was no effusion of fluid. This opacity was observed over a space of four or five square inches in two patients, and over the whole of the upper part of the arachnoid in the two others; it was, moreover, manifestly thickened in one of them. These lesions were, doubtless, ancient, and were antecedent to the typhoid affection, and the case in which there was thickening and opacity is remarkable in this, that this twofold lesion either does not take place,

or is extremely difficult to be decided upon in other serous membranes.

The cellular membrane underneath the arachnoid had more or less fluid effused into it in twenty-eight patients. The effusion was rather copious in four, one of whom died on the twentieth day, and the three others after the thirtieth, after a longer or shorter agony. This confirms what I have said in another work* in relation to the effect of prolonged agony upon the quantity of this effusion (Obs. 16, 30, 43). In the other cases the effusion was slight, and occupied that space merely which lies between a certain number of convolutions, and sometimes was limited to those only, which correspond to the occiput.

I never observed cellular adhesions in the two laminæ of the arachnoid in any case.†

* "Researches upon Phthisis." — LOUIS.

† I examined with care the brain in more than five hundred subjects, and not in a single one did I find any cellular adhesions between the two folds of the arachnoid covering the brain or lining the ventricles. This want of adhesions is a very remarkable fact, in that it seems to prove that we are really ignorant of the signs of arachnitis, since every day we speak of cases of arachnitis cured, and if this was really the case, we ought to find some traces of it at the autopsies we make, that is to say, adhesions, more or less extensive between the folds of the arachnoid. It seems, therefore, that in relation to arachnitis we labor under an error entirely the reverse of that which we were in formerly with regard to the pericarditis. The collection of a great number of facts has demonstrated that cellular adhesions of the pericardium to the heart are much more frequent than it was thought, and, therefore, pericarditis is much less rare and much less fatal than is generally imagined, and the want of adhesions between the folds of the arachnoid seems to prove in regard to the inflammation of this last an entirely different fact, its extreme danger and its infrequency. I do not speak of inflammation of the cellular membrane underneath the arachnoid, this inflammation being not arachnitis, and seeming to me to be of much more frequent occurrence, at least in the adult.

ARTICLE II.

PIA MATER.

It was injected in a little less than half of the cases, and in a remarkable degree in eleven patients, more frequently among those who died between the eighth and twentieth days of the disease than after this period, especially after the thirtieth.

As it is so fragile in health that it cannot be easily separated from the brain except when there is an effusion under the arachnoid, so likewise it preserved the same fragility in the condition of which we are now speaking. Once only I saw it draw after it some portions of the cortical substance in a small part from which I tried to separate it, although in this point neither the pia mater nor the cortical substance presented any appreciable lesions.

The superior cerebral veins were distended by rather a large quantity of blood in a fifth part of the patients, generally when the pia mater was injected. Some bubbles of air were observed in them in one case (Obs. 4).

ARTICLE III.

CEREBRUM.

It presented varieties of color and consistence which it will be well to examine.

The previous reflections are applicable to peritonitis, for adhesions of the peritoneum are rare save upon the convex surface of the liver and spleen, and they are never universal save when the affection, not having been cured, has caused death, (almost solely in cases of tuberculous peritonitis,) which would not be the case if the diagnosis of peritonitis were not often incorrect. — LOUIS.

SEC. 1. — Color.

Instead of having the greyish color, which it has when in a healthy condition, the cortical substance was of a more or less rosy color; the medullary was more or less injected in a great number of cases, and this twofold change was generally in proportion to the injection of the pia mater.

The cortical substance was more or less of a rosy hue throughout its whole thickness and extent in seventeen patients, in a uniform manner and without any alteration of its natural consistence; this rose color, mingled with blackish points in one case (Obs. 45), was nearly violet in two others (Obs. 21, 36), one of which relates to an individual in whom the corpora striata presented the same color (Obs. 36).

It was more frequent among those who died between the eighth and fifteenth days of disease than among those who died after this period, so that it was observed in half of the one and a fourth part of the others. And of the six cases in which it had most intensity, four related to individuals of the first series.

The medullary substance was more or less injected in all the cases excepting seven, and this injection, generally in proportion to the state of the color of the cortical substance, was great in seven subjects, four of whom died before the fifteenth day of the disease, and none after the thirtieth. It was slight in the other cases, and was not absent in one of the individuals who died in the first period of the disease.

No one, doubtless, will seek for the cause of the greater or less injection of the medullary substance in inflammation, but perhaps it will not be so with the rose color of the cortical substance, and one will be the more induced to believe it to be inflammatory, according as the symptoms of the *irritation* shall have been more marked.

Without laying much stress upon the symptoms, for it is not our object to speak of them now, I would remark that they cannot be cited in order to decide upon the seat or the nature of diseases, inasmuch as they present quite often extreme differences in similar affections, and, moreover, the causes of delirium, one of the most common of cerebral symptoms in the disease we are studying, are very various, so that it would be more than temerity to attribute it constantly to inflammation; and, likewise, cerebral symptoms were observed in all the cases, but the rosy color was found in not one half of the patients, therefore the consideration of symptoms could not even *assist* us in resolving this problem. And, in fact, if we examine by itself this rose color, which was uniformly spread over the whole of the cortical substance of the brain, whilst this last had every where its usual size and degree of consistence, we shall not consider this color to have been the product of inflammation. We shall not admit it because this constant uniformity of inflammation, always the same in degree, and never causing more than one effect, viz. the change of color of the organ which is the seat of it, producing neither softening nor thickening of texture, takes place in no one of the organs, the history of whose inflammation in regard to pathological anatomy is the best known.

And, in fact, if the mucous membrane of the stomach is inflamed throughout, not only its color is not every where the same, but its consistence and thickness are more or less unequally changed. Such is the case, likewise, with the lungs. Let one of them be inflamed throughout, and its color is of a deep red in one point, of a less deep red in another, greyish in a third, and somewhat approaching a yellow in a fourth, and to these differences of aspect correspond differences of consistence. The red color of the cortical substance cannot be

considered as the result of inflammation, unless we allow the affection to have been very recent at the death of the subject. Still, on this hypothesis, the uniformity of the color would be difficult to be conceived of, and far from being demonstrated. Likewise, although we admit that this color is an effect produced a very short time previous to death, I think we must consider it as the effect of a simple congestion more or less analogous to the injection of the medullary substance and pia mater, in which I have never found traces of pus in any case. And this view of the subject will be enforced shortly by the facts relating to subjects who died of other acute diseases, and hereafter by the history of the symptoms.

SEC 2. — Consistence of the Cerebrum.

It presented no remarkable appearance in the great majority of cases, and appeared to me only a little greater or less than usual in eleven subjects. Increased consistence I observed in six subjects ; diminished, in five ; excess, in four subjects who died between the eighth and fifteenth day of the disease, and in two others who died on the twentieth and twenty-fifth days ; diminution, in one who died on the latter day, and in four of those who died after the thirty-fifth. So that these opposite degrees of consistence were found in patients placed under different circumstances, some of them having died early in the disease ; others, after a longer or shorter space of time.

In those cases in which there was an excess of consistence the color of the grey substance presented nothing constant ; it was sometimes natural, at others it was more or less of a bright red color. Such was, likewise, the case with the white substance which was sometimes white, at others more or less injected.

There was less difference between the brains of those in whom this organ was a little firmer than usual and those in whom it seemed natural, than between these last and those in whom the brain was less firm than usual ; so that the apparent increase of consistence was perhaps only one of those varieties of firmness of texture to which all our organs seem susceptible when in health, and the diminution may be considered as a lesion more certainly than the increase of consistence.

This mode of viewing the subject seems to me the most natural, the first which must rise in the mind ; it acquires much probability, and becomes nearly certain if we remember that the cerebral symptoms were sufficiently uniform in the greater part of the cases, this degree of consistence somewhat rare, and that it becomes impossible, therefore, to assign to it any order of symptoms ; and this it would be difficult to conceive of on the supposition of its being a lesion. We must remember, likewise, that this condition of the brain has never been observed, as I before remarked, except in cases where death came on rapidly, and that, on the supposition that it existed at an epoch near the commencement in others, it must have been followed, at times, by some secondary lesion. Now this has not been the case. For we cannot consider as such the general diminution of consistence, which is observed in some patients who died after the thirtieth day of the disease, and which exists in a greater degree and greater proportion in individuals attacked by chronic diseases.

But supposing, contrary to all probability, that this condition was a lesion, what is its nature ? Must we consider it the effect of inflammation ? This opinion, which has recently been sustained by a young and skilful physician of the medical school

of Paris, seems to me to be still more opposed to facts than the preceding. For the change of consistence we are now studying was not accompanied by any change of color in the medullary substance ; it was *uniform and general*, and we have seen, in reference to the grey substance, that these characters seem incompatible with the idea of inflammation. No part of the whole substance of the brain had pus in it ; there was not, moreover, any on its surface, nor on the pia mater which envelopes it everywhere. And if we remark that the cases, in which there was found an apparent increase of the usual consistence of the brain, relate to individuals who died early, that is to say, at a period when, if inflammation existed, it must have been acute ; likewise, that at this period the consistence of substance, instead of increasing diminishes, it will be allowed that upon the supposition of the apparent excess of firmness of the brain being a lesion, this diminution of consistence could not under any circumstances be considered as inflammatory.

What has been said previously leaves me but little to speak of in relation to general softening of the brain. I will add merely that its uniformity and the absence of all other lesion do not permit us to refer it to any known morbid change, and must make us consider it as a state more or less analogous to the softening of the liver and heart, about which we have previously spoken.

I met twice with partial and slight softening of the brain. One of the optic thalami was the seat of it in a patient who died on the thirteenth day of the affection, and who experienced no symptom which could be referred with any degree of probability to this lesion, and in him all the brain was perfectly healthy otherwise, save being slightly injected (Obs. 8).

In the other case the softening occupied the septum lucidum, and was more manifest (Obs. 26).ⁱ

I will make but one remark in relation to this species of lesion, which was not accompanied with any change of color in the parts it occupied, which I met likewise in a much more marked manner in a subject who died suddenly while in perfect health, and in a great number of individuals who died of chronic diseases.* But I would refer in this place to what has been stated above, viz. to the necessity of being well acquainted with general results, before we attempt to interpret particular facts. Without the knowledge of these results, how many reflections, the least defect in which would make them useless, would not one be disposed to allow himself to make in the present case? But as the same lesions occur in consequence of acute and chronic diseases, none seems to be peculiar to either, and the facts I shall give hereafter will support this assertion.

SEC. 2. — Ventricles of the Cerebrum.

I did not notice the presence of serous fluid in the third ventricle in a single subject. There was none found, or merely a few drops in the lateral ventricles in six subjects, two of whom died before the fifteenth day of the disease. Twelve others had from four to seven small spoonfuls in the same parts, and had generally died after a considerable space of time. The serous fluid was less abundant in the remainder of the cases.

It was turbid in two subjects, in one of whom the brain was natural (Obs. 33). The cortical substance was of a rose color in the other.

* In my "Memoirs," page 492; and my "Researches upon Phthisis," page 155. — LOUIS.

Thus the injection of the pia mater and the medullary substance of the brain, the rose color of the cortical substance, the firmness of the entire mass of the cerebrum were more frequent and more marked, according to the more or less rapid manner in which the patient had died. The contrary was the fact with regard to the effusion under the arachnoid, the effusion of serous fluid into the lateral ventricles and the diminution of consistence of the cerebral substance.

ARTICLE IV.

CEREBELLUM ; PONS VAROLII ; MEDULLA SPINALIS.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

The *cerebellum* was more frequently in a healthy state than the cerebrum, and when it was not so it generally was affected in a similar manner and in the same cases. Thus its cortical substance was of a rose or red color in five subjects, in four of whom there was the same color in the grey substance of the cerebrum, and the redness was uniform, universal, and without any change of consistence or of thickness in the parts affected. If the corpora striata partook of the violet red color of the cortical substance of the cerebrum in one case, such was likewise the fact with the corpora rhomboidea of the cerebellum (Obs. 27). The consistence of this last appeared greater than that of the cerebrum in two subjects who died on the twentieth and twenty-fourth days of the disease (Obs. 27, 42). It was less in some others. And in one case in which death took place on the thirteenth day of the disease, the left side of the cerebellum was rather less consistent than the right, though the difference was manifest.

The *pons Varolii* was of a rose color, without any other appreciable alteration in a patient in whom the cortical substance of the brain and cerebellum had the same color.

The *medulla spinalis*, examined with care in subjects who had died at more or less remote periods from the beginning of the disease, presented no remarkable appearance, save less consistence than usual in one of them (Obs. 28).

The *fourth ventricle* contained rather a large quantity of serous fluid in an individual who died on the twenty-sixth day of the disease.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

These subjects, among whom are not included those who died of apoplexy, hydrocephalus and softening of the brain, were fifty-seven in number.

1st. Three of them had a slight effusion of clear serous fluid in the upper part of the *arachnoid*.

In two others who died of pneumonia on the fifteenth and eighteenth days of the disease, I found upon a portion of this membrane which covers the *dura mater* of the convexity of the brain, a very soft, red, glairy false membrane, with a slight effusion of fluid of the same color in one case.

The *arachnoid* was somewhat less translucent and was thickened, and more consistent than usual in four subjects; twice in bands or in spots more or less large; twice continuously over all the upper half of the brain. The last two cases relate to pneumonic patients. Although this lesion was probably ancient, and had no relation to the affection which caused death, still it is worthy of notice that one of the last subjects complained of pain in the head during about six months, especially on the side where the thickening and opacity of the *arachnoid* were the most marked.

The membrane under the arachnoid had a slight effusion of fluid into it in the majority, that is to say, that the effusion was limited to the furrows which exist between the convolutions. It was considerable in eight subjects, in whom this tissue was a line thick in consequence of the effusion on the prominent parts of the convolutions.

In a person who died in a few days, this membrane under the arachnoid contained an effusion of pus which covered the cerebrum, cerebellum and spinal marrow.

2d. The *pia mater* was more or less red and injected in twelve subjects, one of whom died almost suddenly. In this case, there was a very close adhesion between this membrane and the cortical substance, which was of a uniform rose color throughout, but which was not softened in the least, even at the spot where the adhesion was most firm.

The superior cerebral veins contained rather a large quantity of blood in fifteen subjects. In two cases of small-pox and gangrenous erysipelas of the lower extremities they contained many bubbles of air.

3d. The cortical substance of the *cerebrum* was of a more or less vivid and uniform rose color throughout its whole extent and thickness in nine subjects. It was of a purplish color in two cases, one of which had the same hue in all the parts of the brain not occupied naturally by the medullary substance.

This last was more or less injected in eight of these cases, and this fact was likewise observed in those patients in whom the cortical substance had a natural color; the injection being vivid in six of them, moderately so in the remainder, excepting four which had not any of this color.

The consistence of the cerebrum was somewhat greater than natural in eight individuals who died of peritonitis, variola, pleuritis and pneumonitis between the eleventh and twentieth

days of these diseases, with the single exception of an individual who died after the thirtieth day of the disease. It was little less than usual, on the contrary, in six subjects who died at a later period than the former. And these two opposite degrees of consistence were uniform throughout the whole of the substance of the encephalon.

Thus, whether we study the brain or its membranes we find the same lesions, the same conditions and very nearly in the same proportions in patients who died of the typhoid affection as in those who died of other acute diseases. No one of these conditions, no one of these lesions is, therefore, peculiar to individuals suffering from the disease which we are studying. This result, which doubtless is unexpected on account of the state of cerebral functions in the two classes of diseases we are analyzing, seems to me to confirm what has been already stated above in regard to effusion of fluid under the arachnoid, the injected state of the pia mater, the rose color of the cortical substance of the brain, viz. that they are very slight, and doubtless the product of the last hours or days of life, because otherwise we should have observed always a certain order of symptoms more or less marked and similar to one another in individuals in whom the brain or its membranes presented the same lesion. Now this was not the fact.

The point in which the brain of those who died of the typhoid affection seemed to me to differ from those of individuals who died of other diseases was this, viz. it was more or less moist in half of the latter, even when its density seemed increased. Now this was not the case with the first, with one exception. (Obs. 53).

The kind of viscosity which the brain had in a great number of cases was nothing peculiar to this organ, inasmuch as

the serous membranes, as it has been already observed, presented many examples of it; likewise the dry aspect of the heart and liver, observed in certain cases of softening, was perhaps an analogous lesion and dependent upon the same cause.

As the subjects who died of the typhoid affection, so some of those whose history we are now studying presented *partial softenings* of the cerebrum, and these softenings in three cases were more extensive and more marked than in those of which we have previously spoken. Two of them relate to patients who died suddenly or nearly so; in one the softening occupied the anterior lobe of the left hemisphere, the corpus striatum of the same side and the septum lucidum;* in the other, the two anterior lobes, especially the left and the cerebellum. This last was more softened than the lobes of the cerebrum, which were themselves more so than in the former case; the whole of the cortical substance was greenish, and the subject of the affection, who had appeared, for many days, convalescent of a cutaneous eruption which had been faintly marked, died a few hours after returning from the garden where he had been walking. In the third case the softening had attacked the occipital lobes, and the subject of the observation died of scarlatina.

If to these three cases of partial softening we add that one in which there was an effusion of pus under the arachnoid, we have four cases in which there were very severe lesions in patients, only one of whom experienced some cerebral symptoms. These lesions, likewise, were much more marked than those which we observed after typhoid fever, and one of them had no analogous lesion among the typhoid patients. We

* See my "Memoirs," page 492. LOUIS.

must allow that had the reverse been the fact, and had the severest lesions been found in consequence of the typhoid affection, we should not probably have wanted good reasons for connecting with them the cerebral symptoms observed during the typhoid disease. Let us judge from this how necessary prudence and exact observations are in medicine for us to be enabled to make rigorous deductions.

The *lateral ventricles* contained each from five to eight small spoonfuls of serous fluid, in eleven subjects, nearly all of whom died after more than twenty days of disease. They had merely a few drops, or a small spoonful in eight others. The quantity of serous fluid was intermediate between this latter and the former quantity in the others.

4th. The softening of the *cerebellum*, besides that of which we have previously spoken, existed likewise in a case of phlegmonous erysipelas of the lower extremities, in which case the pons Varolii had undergone a similar alteration. It was purplish, or of a grey color mingled with red in two patients who died of pneumonia on the eighth and fifteenth days of the disease.

Thus we see that the cerebellum was more seriously but rather less frequently affected in these subjects than in those who died of the typhoid affection; likewise, that the pons Varolii which was not softened in any one of the latter, was so in one of the former. These facts give a new value to, and tend to support the remarks I last made.

CHAPTER XI.

EXTERIOR OF THE BODY.

Form; Quantity of Flesh; Skin; Subcutaneous Cellular Membrane;
Muscles.

I. IN PATIENTS WHO DIED OF THE TYPHOID AFFECTION.

ARTICLE I.

FORM; QUANTITY OF FLESH.

ALL the patients were well formed. Those who died during the first period, or between the eight and fifteenth days of the disease, had a sufficient quantity of flesh, and were not sensibly emaciated. There was more or less emaciation in the others, and one of them, who died after sixty days of disease, was in the last stage of marasmus.

ARTICLE II.

CONDITION OF THE SKIN.

Its lesions were alterations in color and texture. Among these last were erysipelas, blisters and eschars.

SEC. 1. — Color of the Skin.

It presented in every case reddish or whitish stripes somewhat like wheals produced by blows from rods (*vergetures*), on the most dependent parts, especially on the posterior part of the trunk of the body, and so much the more marked as the

disease had been more rapidly fatal. In other parts, these stripes were rare, and, in fact, I found them upon the sides in six subjects only, all of whom died before the thirtieth day of the disease. This supports what I have said in another place in relation to this subject.*

The skin of the abdomen was more or less bluish and violet colored in three individuals who died on the twenty-fourth, forty-third and forty-sixth days of disease, and this color was observed during the day preceding death, and during that on which death took place in the last (Obs. 43). Was it the same in the other cases? Whatever may be the fact with regard to the last two cases, the other seems to show that certain congestions regarded heretofore as cadaveric, engorgement of the lungs, for example, may commence during life. But this state it is difficult to ascertain exactly during life in consequence of the motion which it would be necessary to give the patients, which would not always be without danger.

The parietes of the abdomen had a greenish color in three subjects who died on the eighth, twenty-seventh, and forty-sixth days of the disease, during the months of August, November and July, twenty-eight, thirty-six and forty-eight hours after death.

Finally, the skin was yellow over the whole surface of the body, in two cases in which death took place on the thirty-third and fortieth day of the disease. The liver presented no appearance of disease except in one of them, and the bile ducts were perfectly free in both (Obs. 17, 25).

SEC. 2. — Erysipelas.

Erysipelas left some traces which were more or less marked in four cases, upon the lower extremities in three, upon the

* "Memoir upon Sudden Death." — LOUIS.

upper in the fourth. It terminated quickly by gangrene of the skin which covered the dorsum of one of the feet in one case.

In three others it was limited as follows, to the left leg which it covered over a great extent of surface (Obs. 26), to the right leg and thigh, especially at their outer parts, in another (Obs. 39), to the lower part of the right arm and upper part of the corresponding fore-arm in the third (Obs. 35). In all these cases the diseased skin was more or less thickened and red; the subcutaneous cellular membrane contained a serous fluid mingled with some pus which varied in quantity, and which in one was a little red, and the molecules of fat were firmer and larger than natural; generally yellowish, sometimes red.

In the case which terminated in gangrene the short extensor muscle of the toes and its tendons were exposed or covered merely with a kind of greyish false membrane of little consistence; the skin was likewise separated from the subjacent parts around the ulcer, especially at the back part where the separation extended up to the middle part of the leg.

One fact, moreover, which I would notice, and which is conformable with what is known of the influence of certain medical constitutions upon the development of erysipelas, is the following, viz. these cases were observed all in the same year, (1824), at short intervals from each other; two in May, the others in August and September.

Moreover, the individuals who were attacked with erysipelas died between the twenty-eighth and forty-eighth days of the principal disease, and the erysipelas commenced from six to twenty-five days before the fatal period.

The following observation will afford the reader examples of the majority of the facts we have just mentioned.

TWENTY-SIXTH OBSERVATION.

Pains in the abdomen at the commencement ; afterwards, diarrhœa ; considerable sinking in strength ; profound drowsiness until the last moments of life ; erysipelas of the left leg nine days before the fatal period ; icterus on the day before death ; death on the *thirty-third day*. Skin, erysipelatous, red, thickened ; cellular membrane, corresponding to it with the fat, likewise red and thickened ; many ulcerations in the ileum ; mesenteric glands, corresponding to them, greyish, bluish and enlarged, the majority containing no pus ; liver and biliary ducts, healthy, &c.

A CARPENTER, æt. 19, of a brown complexion, narrow chest and trunk, of small size, thin, and having been at Paris two years, was admitted into the hospital of La Charité, August 6th, 1824. Had been ill seven days, and had quitted work five days before entrance ; had suffered in the beginning from feelings of lassitude about limbs, considerable debility, pains in abdomen, heat, rather severe thirst, and a very marked diminution of the appetite. These symptoms had continued ; anorexia was complete on the third day, and he had had diarrhœa during the four before entrance. The skin, generally hot, was sometimes likewise in perspiration ; sleep had been disturbed ; the patient assured me that he had had a little delirium. Otherwise, he had no nausea, nor vomiting, nor pains in abdomen, nor cough. No venesection had been performed, and the treatment had been limited to diluents (delayants).

On 6th, somnolency, face slightly flushed, slight stupor, sense of great debility ; no pains in limbs ; hearing, acute ; memory, quite slow, incomplete and sometimes entirely wanting ; patient was ignorant of where he was ; tongue, natural at edges, greyish in centre ; great thirst ; deglutition, easy ; ano-

rexia ; abdomen, not pained by pressure ; many dejections, accompanied with colics ; skin, very hot and dry ; pulse, hard, large, difficult to compress, at one hundred and eight ; respiration, somewhat accelerated, without any râle. Memory seemed to return to the patient as I questioned him, and he knew that he was at the hospital of La Charité and how long he had been there.

(Barley emulsion ; lemonade ; flaxseed enema ; diet).

Eight dejections with colic pains during the day. 7th. The tongue was a little red at its tip, the pulse was large and moderately accelerated ; some lenticular rose spots were upon the abdomen. The remainder of the symptoms were as on preceding day.

The drowsiness was nearly constant during the day, and was entirely so during the night. On 8th, somnolency ; correct answers ; face, but slightly flushed ; no headache ; pulse, at one hundred.

(Venesection to § viij. ; barley ; enema).

9th. The blood drawn was neither buffed nor cupped ; increased debility ; appearance of depression more marked than on any previous day ; answers, more slowly returned ; abdomen, not enlarged, not pained by pressure ; skin, quite hot ; pulse, as on day before ; no cough.

(Same prescription).

10th. Face, a little more flushed ; eyes, natural ; skin, moderately hot ; pulse, slightly accelerated ; nothing else remarkable.

11th. Appearance of embarrassment ; face, purplish ; tongue as on 9th ; four dejections without colic pains. Patient on seeing food given to those around him asked to have some, and wept on being unable to obtain any.

During the night he was in a profuse sweat. On 12th,

his mental powers and position in bed were sufficiently good ; the abdomen was not pained by pressure ; it was covered with sudamina, among which were many rose colored lenticular spots ; one liquid dejection ; pulse at ninety-five, sufficiently large, not hard.

From this time until 21st the somnolency was nearly constant ; it was greater during the 13th and 14th than at any other epoch ; extreme debility, so that the patient could hardly raise his arms during the last two days. There was no buzzing in ears except at distant intervals ; his tongue was natural ; he was continually demanding food, and he was allowed to take beef-tea, afterwards rice fritters (*crèmes de riz*) ; there was neither nausea nor vomiting ; one or two dejections daily. The abdomen was never distended and not tender on pressure ; his pulse about seventy-five ; skin, moderately hot. He rarely was in perspiration. The only drinks taken were lemonade and sweetened barley water.

23d. Pulse, at a hundred ; tongue, dry and ruddy ; patient was ill humored. 25th. He refused the beef-tea ; said he had nearly died during the night he had been so feeble, and then it was perceived that there was an erysipelas on the left leg.

During the night of 25th to 26th, slight delirium, and at the morning visit of the next day his face was pale, and appeared as if he were suffering ; features sunken ; left leg, enlarged and of a dark red color over three quarters of its surface between its two extremities ; skin, firm and prominent in the same limits ; two small ulcers as if made by a gouge on the blister of this side, which otherwise had been dry for a long time. Patient said he had been suffering in the leg for five days ; his tongue was dry, papillæ of it rather prominent and yellowish ; the abdomen was slightly meteorised ; the dejections were frequent ; the pulse was small

and feeble, at a hundred and ten ; the skin, very hot and dry.

27th. The erysipelas seemed stationary ; the skin of the part was of a violet red color ; the sclerotic was of a yellowish color.

28th. Increase in the size of the left leg throughout its whole length ; same color and hardness of the skin as before ; it was of a leaden hue, though there was yellow color generally over body ; buzzing in ears at times as during five previous days ; tongue, moist and not easily protruded ; abdomen, rather flat than prominent, and not pained by pressure ; pulse, full, soft and still at a hundred and ten.

29th. At morning visit its frequency was the same, and the delirium which the patient had experienced during the whole day and night, continued. The left leg was less in size than on the day before ; it was blackish on the calf and at the heel, and around these parts it was of a coppery red color ; the epidermis was separated over a considerable extent ; the yellow color of the skin was brighter ; the heat of it was great ; the tongue was moist, thickened and covered with small white patches, some of which were likewise observed upon the lips.

The delirium continued and the patient was uttering loud cries all night. On 30th, the characters of the erysipelas were still more marked ; the right thigh was red ; the emaciation of the face and body was much more marked than during the previous days ; the patches on the tongue and lips were thickened ; the respiratory murmur was mixed with a little mucous râle at the left side of the chest ; profound drowsiness.

Patient died the same day, at three, P. M.

Opening of the corpse seventeen hours after death.

EXTERIOR. — Yellow color of skin, general and as intense as before death. It was the same with the redness and swelling of the left leg, the skin of which was thicker and less supple than any where else. The cellular membrane corresponding to it contained a clear serous fluid and reddish fatty lobules, which were firmer and more marked than those on the other side.

HEAD. — Some drops of serous fluid in the cavity of the *arachnoid*; very slight effusion underneath this membrane, but only in the intervals between the convolutions of the brain; a little less than a spoonful of serous fluid in each one of the lateral *ventricles*. *Pia mater*, a little injected and adherent in some points very intimately with the cortical substance, some portions of which were taken off with the membrane. In this point, as through the rest of its extent, this substance had a rose color, and was not sensibly softened. The medullary substance was a little injected, of a perfect whiteness, similar to that of a subject opened at the same time, and who died without icterus; it was a little softened, especially about the septum lucidum, the fibres of which yielded to the slightest effort.

NECK. — The mucous membrane of the *pharynx* and air passages was natural; the cartilages and veins of the *larynx* and *trachea* were yellow externally only, as were the cartilages of the ribs.

CHEST. — General cellular adhesions between the *pericardium* and the *heart* which were perfectly healthy in other respects. *Aorta*, of a bright yellow color. *Left lung*, without adhesions, reddish and yellowish externally, and had a little congestion as in the first stage of inflammation at its pos-

terior part. The *right lung* adhered closely throughout to the pleura of the diaphragm and ribs. Its lower lobe was hard, purplish, rough, mamelonated as it were over a great extent of surface ; it was homogeneous, blackish and had no granulated aspect internally in the corresponding parts. Incisions made in it were covered with a film of blackish fluid containing no air, and the open orifices of vessels were seen upon the cut surfaces.

ABDOMEN. — No effusion into the cavity of the *peritoneum*. *Esophagus*, healthy, except that there was a small ulcer four lines large, two inches above the cardiac orifice, by which the muscular coat was exposed. *Stomach*, of medium size. Its mucous membrane was yellowish and velvet-like in the great cul-de-sac ; it was of a rosy hue, mamelonated and covered with rather a viscid mucus in other parts ; it was of a proper thickness and consistence every where. *Duodenum*, natural, except that it had a slightly rose-colored hue. The *small intestine* contained rather a large quantity of yellow mucus. Its internal membrane was red in some parts of its first third ; was pale afterwards, and had throughout its usual consistence and thickness. Throughout its whole extent, opposite the mesentery, were seen the elliptical patches, of a more or less greyish color, twice as thick as usual, and from one to two inches in their greatest diameter, from half a foot to about a foot distant from each other, and in the last four feet in the neighborhood of the cæcum they were ulcerated. The *ulcerations* were either single or numerous on the same patch, to the number of thirty ; they were generally small, the largest being but eight lines only in diameter. The muscular coat was exposed by them without appreciable alteration ; their edges were greyish and but little prominent. In the last two inches, near the ileo-cæcal valve, the intestine was of an irregular

bluish color around the whole intestine. The surface was puffed up, and four ulcers were there, from three to four lines in size, on none of which had cicatrization commenced. The *large intestine* contained a moderate quantity of pulaceous faecal matter, and in the cæcum two small ulcers were seen, which were bluish and greyish at their circumference, and by them the cellular membrane had been exposed. Its mucous membrane was pale and of proper thickness throughout its whole extent; it was very much softened in its first half and of a good consistence afterwards, save in the rectum where it was a little less firm than usual. The *mesenteric glands* were greyish and bluish, enlarged and softened, and one of them was entirely transformed into a cyst filled with a pulaceous yellow matter. The *liver* was perfectly healthy; the *gall-bladder*, distended with a thin liquid, of a deep yellow color; the *bile-ducts* were healthy and presented no obstacle to the passage of the bile. The *spleen* was nearly three times as large as usual, somewhat less consistent, and of a blackish red color internally. The tubular cones of the *kidneys* were yellowish at their extremities. There was nothing else remarkable.

Except the softening of the first half of the large intestine, the splenified state of one of the lungs and the erysipelas, the disorders of the system were not very severe, nor more than the resources of nature could withstand, and we may believe that had it not been for the erysipelas the patient would have been cured. Moreover, his disease had remained stationary for some days, his pulse was but slightly accelerated when he experienced, for the first time, pains in the left leg, and which I did not see until some days afterwards, when it was already enlarged and of rather a bright red color, which increased afterwards. Then, the pulse became very rapid; delirium

came on soon afterwards, and on the ninth day of the erysipelas the patient died, and at the autopsy the skin, with the corresponding cellular membrane, whether containing fat or not, presented the same characters indicated in the general description; that is to say, the skin was thickened and of a vivid red color. This last fact is one proof among others, that redness does not disappear after death when it is really caused by inflammation.

This fact must remind us of another entirely similar in one respect, viz. the only case which I took notes of, in which there was inflammation of the parotid, and in which the patient experienced pain in the parts near it several days before the disease was recognised (Obs. 15). This patient, like the last, was in a very feeble condition, although he had less somnolency and the reflections made upon his case,* in relation to the necessity of asking many questions even when the patients themselves do not complain, and the organ seems not in a morbid condition, apply exactly to this case.

The course of the disease was precisely that which it is usually, the first symptoms having announced an affection of the abdomen; and at the autopsy we found the severest lesions in the small intestine nearest the ileo-cæcal valve. The patches, whether ulcerated or otherwise, were in harmony with that stationary condition of the disease which preceded the commencement of erysipelas, being, as we have seen, a little thickened, of moderate consistence and greyish, as if the inflammatory condition, about which there could be no doubt, had retrograded. It is, moreover, probable, that inflammation had attacked, at least in a certain degree, all the patches, inasmuch as all of them were thicker than natural. The color of the mesenteric glands corresponded with that of the

* Page 110.

elliptical patches, and indicated a retrograde course, all doubt about which was removed by the conversion of one of them into pus.

The cause of the icterus remains unknown, but it is worthy of notice that the cartilages were of a yellow color although death occurred three days after the appearance of the yellowness, which proves the extreme rapidity of the combinations of the serous fluid.

I will not make any reflections upon the rough, and, as it were, mamelonated state of the lungs which has been noticed in a preceding chapter, but I would remark that there was not any meteorism at any time, notwithstanding the numerous ulcerations of the small intestine.

SEC. 3. — Blisters.

The skin presented more or less serious changes in those parts where blisters had been applied and kept on until death, unless, at least, their application had been but a short time, three or four days before death. I except, however, two cases in which, after forty-eight and seventy-two hours application, the skin was sensibly thickened. In the others, which were fourteen in number, the skin had lost its usual suppleness, was thickened and more or less red, or it was thinned, ulcerated or completely destroyed over a larger or smaller extent of surface. This last lesion was found in three subjects who died on the fifteenth, sixteenth and twenty-sixth days of the application of the blisters (Obs. 14, 18, 39). The diminution of thickness was more or less uniform or unequal in four cases, eight or ten days after the same application (Obs. 15, 29, 32, 46). The thickening was connected with redness in subjects who had had blisters applied from six to nine days before death.

The cellular membrane containing fat, corresponding to the diseased skin, was more or less hard and thickened in those cases in which the skin was not destroyed ; it was more or less red in those in which there was absolute destruction, and then it was sometimes thinned.

SEC. 4. — Eschars.

This lesion, which I almost always omitted to describe after death, was observed during life in eight patients, or in a sixth part of the whole. One died on the sixteenth day of the disease, four, between the twentieth and thirtieth ; the three last after this period, so that there was no case of this affection in the first series. The size of the eschars varied from some lines to three inches. They fell off more or less promptly, and gave origin to ulcers proportionably long, and at their circumference the skin was separated from the subjacent parts to a considerable extent, and generally was united to a portion more or less thick of the subjacent cellular membrane.

I observed one other lesion which was, as it were, a disease between erysipelas and eschar ; it was a number of small ulcerations, more or less superficial, upon the right leg, around which the skin was red and thickened.

ARTICLE III.

CELLULAR MEMBRANE.

Excepting those cases which have been already mentioned, and two others of which I shall speak presently, the subjacent cellular membrane presented no sensible change. Of these last, one was an example of an abscess underneath and within the right side of the lower jaw, in a patient who died on the

fortieth day of the disease, the first symptoms of which commenced three weeks before death ; in the other case there was considerable emphysema of the neck, the skin of which was greenish. The subject of this case died on the eighth day of the disease, and an autopsy was made of it, August 10th, twenty-eight hours after death.

Admitting that the season had some influence upon this emphysema, we cannot suppose it to have been the sole cause of it, nor even the most important one, inasmuch as ten others who died of the same disease in the months of June, July and August presented nothing similar.

Whatever, however, may have been the effect of temperature in the production of the phenomenon which we are now studying, we cannot attribute it, with certainty, but to a more or less serious alteration of the fluids, an alteration which was so much the more remarkable as the subject died very suddenly. That the green color resulted from the same cause, we have, in some measure, a more direct proof in the fact that the kidneys, in many subjects who died of the typhoid affection, after having been divided and exposed during twelve or twenty minutes, became greenish ; now this was not the case among those who died of chronic disease, and in many cases of acute disease.

ARTICLE IV.

MUSCLES.

I examined the muscles which govern the voluntary movements in nearly all the subjects, and I found them always natural with regard to color and consistence ; and this is the more remarkable inasmuch, as I observed above, the heart was more

or less seriously softened in a great number of cases. I did not even find them sticky (*poisseux*), although they are generally believed to be so after the typhoid affection, and this character would be less remarkable inasmuch, as has been already remarked, we find it in many organs, as for instance, the brain and the serous membranes.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

The exterior of the body presented the appearance of morbid changes similar to those already described, but in different proportions.

1st. There were stripes as from blows with rods, or wheals (*vergetures*), on the lateral and anterior parts of the trunk in six subjects, two of whom died rather rapidly after pneumonia; the others died in an unexpected and almost sudden manner. Also in many cases of emphysema the parietes of the abdomen were greenish. In three others the skin was of a yellow color throughout its whole extent; the biliary ducts were perfectly free, and the liver was in a natural condition except that there was a little more or a little less firmness of texture than usual.

The epidermis was raised in a great many points which had the aspect of so many vesicles, more or less large, filled with a very clear rose colored fluid in two subjects, who died in consequence of scarlatina or small-pox. I do not know the time at which the vesicles commenced.

The skin of the hands or of the right arm was a little harder and thicker than usual, without any evident alteration of its natural color in two subjects who died of pneumonia, and who had had a long time before death a phlegmonous erysipelas of this part. There was, likewise, in addition to this in one

case, in which the inflammation arose from the lips of the orifice made in venesection, a quantity of pus in the sheath of the extensor tendons of the fingers. Some was, likewise, found between the skin and the muscles in another case.

One subject to whom a sinapism had been applied thirty hours before death had at the autopsy a vivid redness in the part where the application had been made.

In the part where blisters had been applied and kept on until death, during a number of days, from four to ten, the skin was more or less red, thickened and firm; the cellular membrane containing fat was more thick and dense than in the surrounding parts, and in one case in which a blister had been applied to the chest a long time before death, the skin had an infinity of small superficial ulcerations in the corresponding parts. That is, it was like the mucous membranes as little disposed to ulcerate in the course of acute diseases other than the typhoid affection, as it was frequently ulcerated in this last.

There were eschars over the great trochanter and sacrum in two cases, in one of which the patient died of gangrenous erysipelas, and in the other, of a disease to which I found it impossible to give a name (Obs. 50).

2d. The cellular membrane was emphysematous in eight subjects, and as we shall soon see this emphysema was not less remarkable for its magnitude than for its frequency. It was found in a young woman who was about to leave the hospital, being convalescent from a badly marked cutaneous eruption, and who died almost suddenly and in a very unexpected manner. The other patients died of various diseases, small-pox, scarlatina, apoplexy, phlegmonous and gangrenous erysipelas of the lower extremities and pneumonia. These last offered each two examples of the condition which we are now studying.

Emphysema was not general in all the subjects, but in all it existed about the neck. Now this part was the only one in which it was found in a single case of typhus in which emphysema existed, which seems to me somewhat remarkable. It was limited to this region in one patient who died in consequence of erysipelas; it extended to the top of the chest in two pneumonic patients; it was general in the majority of the other subjects, and very marked in the lower limbs in one case of erysipelas, in those of scarlatina and variola, and the case in which death came on almost suddenly and in an unexpected manner.

In the lower extremities this emphysema was not found in the subcutaneous cellular membrane, but in the midst of the muscles, which appeared as if dissected, especially near the bones, with which the muscles seemed, at the first glance, to have lost their connexion. It was not less in their substance than in their intervening spaces, so that on plunging a knife into them they lost the greater part of their size, and contracted rapidly.

There was one coincidence very worthy of attention, viz. that the heart and liver were both softened in all those cases, and in three of them the liver itself was emphysematous.

In the majority, five out of eight, death took place at the warmest season of the year; in the three others on the 8th, 17th and 28th of September. So that, as I have already observed, elevation of temperature cannot be considered as the sole cause of emphysema, inasmuch as many subjects examined during the months of August and July, did not have any of it, and we must attribute it to the change in the fluids, a change which is perfectly proved by two facts, viz. 1st, that the heart and liver were softened in *all* the cases, the softening of the heart almost always coinciding with a morbid con-

dition of the blood; 2d, one of these subjects, examined twelve hours after death, was emphysematous.

If the proportion of cases, in which I observed emphysema of the cellular membrane in patients who died of typhus and of other acute diseases, is not the effect of chance, we must conclude that the liquids are more frequently and more seriously diseased in these last affections than in the first, especially in scarlatina, small-pox and phlegmonous erysipelas of the limbs.

Perhaps one may find a reason why emphysema most frequently attacks the neck, in the fact of the number of large vessels, and consequently large quantity of liquid contained there.

CHAPTER XII.

CAUSES OF DEATH.

It probably never happens that individuals, who die of a disease the seat of which is well determined, are free from lesions in other organs besides that primitively affected, at least, I never met with any example. But in the larger number of these cases, the disorder of the organ is so great that death is explained easily by it, and we can, to a certain point, neglect the consideration of the secondary lesions; but in others, the primitive lesion is so slight, either from its commencement, or because it has retrograded some time before death, that death cannot be explained without having recourse to accessory lesions, and we cannot but admit that had it not been for the addition of these latter to

what previously existed, the patients would probably have recovered from the primitive affection.

As facts of this kind are not rare, and as autopsies have been made with little care until of late years, I cannot doubt these circumstances have contributed very powerfully to maintain in the best minds the old doctrine of fevers; and that it has been denied that the small intestine was the seat of these diseases, because its lesions could not always explain the reason of death. We will, therefore, re-consider in detail this point upon which I have already made many remarks when summing up particular facts. The following has been the result of my investigations.

In eighteen subjects, or in about two fifths of the subjects whose cases we are analyzing, I could not explain death from the appearance of the elliptical patches of the small intestine, the intervening mucous membrane, and the mesenteric glands; consequently I was obliged to have recourse for an explanation, to the lesions of other organs, large intestine, stomach, &c.; lesions which in every case except two, appeared to me to account sufficiently for the fatal termination (Obs. 11, 29).

Let us now examine the proportion in which these secondary lesions were found, those by means of which we can *principally* explain death.* It was the result of phlegmonous erysipelas of the lower [?] extremities in three subjects (Obs. 26, 35, 38), of a very recent and somewhat extensive arachnitis in two others (Obs. 17, 25); of a membranous inflammation of the air passages in two cases (Obs. 20, 31), and

* I say *principally*, because in addition to the morbid change in the small intestine and of the organ specially spoken of, there was, likewise, some lesion of some other organ, which could not be neglected in any of the cases, especially in those in which, no one lesion being very severe, the cause of death seemed to rest upon a great number of organs. — LOUIS.

partly of an œdema of the glottis in the subject of the first observation ; of inflammation which terminated in suppuration of the submucous cellular membrane of the pharynx in two individuals (Obs. 19, 46), a lesion which of itself was quite severe, and which became much more important when connected with the debility of the patients at the time of its commencement ; of hepatization and the first stage of inflammation, or congestion of the lungs in two cases (Obs. 16, 18) ; of the same lesion together with a more or less marked softening of the mucous membrane of the stomach in two others (Obs. 15, 28) ; of softening with diminution of thickness, or even destruction of the same membrane in two cases which I shall shortly detail (Obs. 27, 28), and in the last two, of a great number of lesions, any one of which taken alone would not account for it, the principal of which were those of the lungs and stomach in one patient (Obs. 5) ; the stomach, in which were many ulcerations, the heart, liver and spleen, which were very much softened in another (Obs. 33). These last lesions I have not spoken of in the other cases in which it seemed possible to explain death without having recourse to them, and because in this chapter we are examining for this object alone.

Moreover, the proportion of cases in which death could not be explained by the lesions of the small intestine was not the same in all the series of patients, but it was greater in those who died after the twentieth day than in those who died at an earlier period.

Let us now examine the histories of two patients in whom death could be explained only by the morbid changes of the mucous membrane of the stomach.

TWENTY-SEVENTH OBSERVATION.

Delirium; dejections not frequent; 'considerable meteorism; tenderness of the abdomen; death on the *twenty-second day*. Softening with diminution of thickness, or even destruction in bands of the mucous membrane of the stomach; elliptical patches of the ileum, red, thickened, softened, not ulcerated; mesenteric glands, of a bright red color, somewhat enlarged and softened; large intestine, much distended.

A JOURNEYMAN mason, æt. 17, of a feeble constitution, with genital organs but little developed and covered only with a slight down, was brought to the hospital of La Charité, Dec. 1st, 1825, complaining that he had been ill fifteen days. He had but just arrived when violent delirium came on; and he tried to get out of bed, where the attendants were obliged to keep him confined by means of a straight jacket, towards eight in the evening. Soon afterwards he became calmer, and at the morning visit of the next day he was as follows.

Face, full, slightly flushed; continual motion of head from right to left; efforts to break fastenings; pupils, rather large; no stupor, but mind almost completely gone; tongue, dry, not red, imperfectly protruded; abdomen, much meteorised, painful on pressure; no dejections since entrance; respiration, unequal, at times accelerated; cough, rare; much dry, sonorous râle on both sides of chest; pulse, regular, not large, at a hundred and twelve; skin, rather hot; no rose colored lenticular spots on the surface of the body.

(Tonic potion with $\frac{3}{4}$ i. of extract of cinchona; infusion of cinchona; solut. de syrop. tart. twice; friction with camphorated alcohol; enema of camphorated cinchona).

Although less agitated during the remainder of the day and night, still the patient was restrained only by means of a straight jacket. He had no dejection, passed urine in bed

and was frequently muttering. He took his potion in a bitter ptisan. On 3d, drowsiness; eyelids, closed; same meteorism of abdomen as on preceding day; pulse, small, feeble, at a hundred and twenty-eight; skin, soft and warm and a little moist.

(Extract of cinchona \mathfrak{z} ij.; otherwise same prescription as before).

Constipation continued; the day was very nearly as the previous ones, and except a very marked diminution of the meteorism, the patient was at the morning visit of 4th in the same condition as on the previous days.

(Gum potion with \mathfrak{z} ij. of extract of cinchona).

The straight jacket was taken off early; the somnolency continued; patient groaned frequently; no dejections. On 5th, at visit, patient was extremely tender over the whole body, especially over abdomen, and manifested extreme impatience when touched; the meteorism and other symptoms had not altered.

(Gum potion with extract of cinchona \mathfrak{z} iss.; enema of camphorated cinchona; blister to the chest).

The enema returned without any *fæcal* matter; the potion was taken as usual in a bitter infusion. At the morning visit of 6th, patient complained much and was continually groaning; speech was unintelligible; eyelids, firmly closed; tongue, covered with a dryish and blackish mucus; pulse, small and feeble; impatience so great that the patient struck those who felt of his pulse. The dyspnœa continued to increase until death took place on the next day, at five, A. M.

Opening of the corpse twenty-seven hours after death.

EXTERIOR. — Nothing remarkable except the meteorism of the abdomen. Muscles, natural.

HEAD. — *Arachnoid*, not translucent on either side of the longitudinal sinus for the space of an inch, and in the intervals of the convolutions. No granulations (Pacchioni's glands) were to be seen. Very slight effusion under the arachnoid; a small spoonful of clear serous fluid in each one of the lateral *ventricles*; *cortical* substance of the brain, of a rosy hue throughout its whole extent and thickness; *medullary*, very slightly injected; both of moderate consistence. The *cerebellum* was a little firmer than the cerebrum; the *pons Varolii* still more so.

NECK. — The *epiglottis* and *larynx* were natural; the *trachea* was of a pale rose color.

CHEST. — *Lungs*, free from adhesions, somewhat sticky; of a rather bright red color at their apex, and having behind at their lower half a blackish band five inches high, one broad, from two to three lines thick, throughout the whole extent of which the parenchyma of the lungs was hard, homogeneous, containing no air, not granulated however, and containing but a small quantity of blood which could be squeezed out. Besides this there were, likewise, on the exterior and in the substance of the lungs, black rounded spots, more numerous at the base than at the apex, without hardening of the parenchyma, which was generally firmer than natural. *Heart*, healthy, except a slight softening of the left ventricle. The *aorta* contained much blood, and presented otherwise nothing remarkable.

ABDOMEN. — *Œsophagus*, healthy. *Stomach*, of medium size, and contained not more than half a wine glass of yellow fluid. Its mucous membrane had the same color in the great cul-de-sac, was greyish and of a rosy hue in the remainder; it was semi-transparent and had lost nearly two thirds of

its usual consistence in its upper half. In this part there were seven bands of a bluish white color, five inches long, and from three to four lines broad, and in this part the membrane was extremely thin and soft. It was even entirely gone in some parts. Every where else its consistence was but slightly diminished, and it presented no very remarkable appearance. The submucous cellular membrane was slightly injected. The *small intestine* was of its usual size, and contained rather a large quantity of bile mingled with some mucus. Its mucous membrane had many *zones* of a yellowish, orange or bright red color; it was thin and of good consistence save where red, and in these points it was softened. The *elliptical patches* of the ileum were more or less red, thickened and softened; the submucous cellular membrane partook of this condition of the mucous membrane. There was, likewise, in the last four feet a great number of isolated glands more or less enlarged. The *large intestine* was distended with gases, and the sigmoid flexure of the colon was very much turned towards the right side, and contained much moulded fæcal matter. Its mucous membrane was of a proper thickness, and in different parts was red, and was rather less firm than usual save in the rectum. The *mesenteric glands* were of a bright red color, moderately softened, and about the size of small nuts; the *liver* was of good consistence; the *gall-bladder* was distended by a thin, semi-transparent, yellowish green fluid; the *spleen* was softened, of a violet-red color, and of four times its usual size; the other *viscera* were healthy.

If this observation is incomplete in regard to symptoms, there is little left by it to be desired in regard to post-mortem appearances, and we need only mention the state of the different organs to be satisfied that the condition of the *small intestine* could

hardly account for the death of the patient. The elliptical patches, it is true, were all more or less inflamed, the isolated glands numerous and enlarged in the last four feet of the small intestine, still these lesions were slight and but little advanced; there were no ulcerations, and the mucous membrane between the patches was not diseased save in a few points. The lesions of the mucous membrane of the stomach, which was more or less thinned, softened or destroyed in some parts, could alone* explain the reason of death taking place, or at least must be regarded as the principal cause of it; other lesions, especially the meteorism, having concurred more or less to its production.

It is, moreover, remarkable that the mucous membrane of the large intestine, notwithstanding its great distention, was of a proper thickness, that is, it was really thickened, and this can hardly be attributed to the re-action produced by the distention itself, as we have above stated, because the mucous membrane, except in this thickening, was very nearly healthy.

I know not whether there were any gastric symptoms before the patient entered the hospital, but afterwards certainly there was neither nausea nor vomiting, and we must account for their absence by the fact of the existence of cerebral symptoms.†

* Professor Carswell of the London University has lately proved, that often there is softening of the mucous membrane of the stomach in consequence of the gastric juice acting upon it after death. Moreover, in proportion to the acid qualities of this juice so is the softening greater. Louis did not test the liquid he found in the stomach, perhaps, therefore, he is wrong in supposing that death was caused by the affection of the mucous membrane, which possibly was only a post-mortem effect. See Carswell's *Pathological Anatomy*, Fasciculus on Softening; also Appendix to this work. — H. I. B.

† I think the fact of the absence of all symptoms rather a proof that this case was one of those described by the Professor above-mentioned. — H. I. B.

The viscosity of the lungs to the touch should be observed. Their firmness of texture, similar to that which would have taken place in hypertrophy, (a lesion which it would be difficult to demonstrate rigorously) is worthy of some attention, inasmuch as it is often met with.

The following fact, which is quite analogous to that just given, will be an example in which death happened very suddenly and unexpectedly without any struggle.

TWENTY-EIGHTH OBSERVATION.

Fever, diarrhœa and headache at commencement ; delirium and meteorism on the third day, increasing afterwards, and constant until death, which took place on the *twenty-fifth day*. Mucous membrane of the stomach, softened and thinned in its two upper thirds. Elliptical patches of the ileum, greyish and reddish near the cæcum, &c. ; colon, very much meteorised ; pus in the gall-bladder, &c.

A BAKER, æt. 25, of a rather large frame, not very fleshy, who had been at Paris six months, was taken suddenly without evident cause, April 23d, 1824, with a violent chill, followed soon by heat and sweat, which recurred on the two succeeding days. At the same time intense thirst began, with headache, pains in limbs, cough and anorexia. No colics nor vomiting even after having taken a pint of warm sweetened wine and water on the first day during the chill ; one liquid dejection daily. On being brought to the hospital of La Charité, at the beginning of the third day of the disease, the patient was soon bled, experienced soon a little relief from this venesection and slept quietly during the night.

On the next day, April 26th, at the end of the third day his face was red, somewhat of a coppery color ; features suffi-

ciently natural ; pain above orbits of eyes ; pains in limbs ; senses and mind perfectly clear and good ; great thirst ; anorexia ; tongue, slightly moist and whitish on sides, reddish in centre ; epigastrium, supple, not painful on pressure ; abdomen, a little meteorised at the right side and in the hypogastrium, not pained by deep pressure save at left side ; one liquid dejection during the night ; skin, very hot and dry, not troublesome, however, to patient ; pulse, regular, at a hundred, not large nor hard ; cough frequent ; sputa, few in number and greenish, puriform, not frothy ; chest, perfectly sonorous on percussion every where ; dry, noisy râle behind at left, none any where else ; frequent reveries (revasseries) during the night. The blood drawn day before was neither buffed nor cupped.

(Venesection to $\frac{3}{4}$ x. ; sweetened barley water three times.)

27th. Face, less flushed and sufficiently natural ; tongue, rather moist, of a violet red color in the centre ; considerable meteorism of abdomen, which was not sensible at all to pressure ; four liquid dejections ; skin, rather less hot and dry ; pulse, larger, somewhat less frequent ; cough, infrequent ; percussion, a little dull behind and at lower part of left side in the region of the spleen. The remainder of the symptoms as those of the day before. Blood again not buffed nor cupped.

(Barley emulsion, three times).

28th. Except a slight sinking of features the condition of the patient had not sensibly changed ; the sputa were puriform as on the first day ; three liquid dejections.

Much delirium and agitation during the evening ; patient got up in bed and threw himself back again several times during the night. On the morning of the next day, his delirium continued, and he raved about a sum of money which he declared had been taken from him ; his face was

bright and bore the appearance of deep thought; his words were nearly unintelligible; his tongue, purplish and moist; there was considerable meteorism; the skin was rather hot; pulse, eighty-six; respiration, feeble in front.

(Whey, twice; orge. syr. tart.; six leeches to each ear; blisters to legs).

A little drowsiness during the day; much restlessness and some involuntary dejections during the night; the patient being confined merely by his limbs, contrived to free himself and fell upon the floor. On 30th, he said he was not suffering at all; his pupils were dilated; winking, not frequent; features, perfectly still, but no proper stupor; skin, moderately hot; pulse, at eighty, sufficiently full; tongue, less moist and less red than day previous; abdomen, much meteorised; respiratory murmur, pure on both sides; cough, infrequent; patient asked for nothing, not even to drink, and notwithstanding the apparent condition of the mind, he allowed himself to be examined by auscultation, and seemed to understand the object of it.

(Sinapisms to the feet; ice upon head).

He did not recognise his relations who visited him; he had involuntary dejections, less restlessness during the night than usual, and made no efforts to get out of bed. On May 1st, face rather red; manner, absent; impatience; some spasmodic motions of lips; tongue, rather pale than red; abdomen, very much meteorised.

(Tamarind whey, twice; orge. syr. tart. twice; emollient fomentations; sinapisms).

Patient answered well all questions, and was sufficiently calm during the day. At the morning visit of next day he was as on the preceding day.

From 2d to 3d, numerous and involuntary dejections; no delirium, but almost constant drowsiness, and for the first time

for three days, the patient recognised his brothers. On the morning of 3d, face, nearly natural, of a sufficiently good color ; position in bed sufficiently good ; great thirst ; tongue, easily protruded, a little redder than day before ; abdomen, very much meteorised, not pained by pressure ; skin, somewhat hot ; pulse, eighty-two ; rose colored lenticular spots upon abdomen ; cough, not frequent ; dry and sonorous râle in front.

(Orge. sir. tart., three times ; infusion of cinchona with gum arabic in it ; enema of cinchona ; fomentations with aromatic wine.)

Still some involuntary dejections, and except a slight paleness of the spots, there was no appreciable change in the symptoms on 4th.

(Same prescription).

From that time until 17th, no delirium ; answers were correct ; there was neither prostration nor stupor ; the face was sufficiently natural after 10th. Tongue, moist, and of a good color, save on 16th, when I found it a little red and becoming dry immediately after being moistened by drinks ; thirst, variable, more or less severe, sometimes very slight. No pain or uneasy sensation at epigastrium after bitter potion ; dejections, rather numerous and liquid. Meteorism, rather less on 9th and the succeeding days than during the preceding ; abdomen always free from pain on pressure. Pulse, from seventy-five to eighty-five until 14th ; skin, moderately hot ; perspiration not frequent ; no sudamina ; rose colored spots very pale on 7th ; sputa, mucous, thick, containing no air, nor were they purulent.

At the morning visit of 17th, the features were sufficiently natural ; tongue, a little red and dry ; slight meteorism ; four dejections during the day, for each one of which the patient went to the close-stool.

On the same day, at four, P. M., the patient appeared as in the morning, and asked, as he had frequently done during the two or three previous days, for a little wine. A little was given to him, and in a few moments he died without the attention of the servants having been attracted to him, or their having feared in the least his death.

The infusion of cinchona had been continued, acidulated with muriatic acid, and to it was added rice water acidulated in like manner, and during the last days some cups of beef-tea and half of a rice fritter were ordered.

Opening of the corpse forty hours after death.

EXTERIOR. — Meteorism; the skin of the right leg upon which the blister had been applied was ulcerated, incompletely destroyed in some points, and of nearly double its usual thickness in others. It was less thick and less firm at left in the corresponding part.

HEAD. — Some granulations upon the *arachnoid* near *falx*. Slight effusion under *arachnoid* and *pia mater*. From three to four small spoonfuls in each of the lateral *ventricles*; a little less in the lower occipital *fossæ*; medullary substance of the brain but little injected; its consistence rather less than usual.

SPINE. — *Spinal marrow*, a little less firm than usual, save to within three inches of its lower extremity, and except this it was perfectly healthy.

NECK. — The *pharynx*, *amygdalæ*, *epiglottis* and *larynx* were in a natural condition; the *trachea* and *bronchia* were red as if they had been macerated in a liquid of the same color; their mucous membrane was without change of consistence or thickness.

CHEST. — The *heart* was rather small, but otherwise

healthy. *Aorta*, of a bright continuous red color as far as two inches below the left subclavian ; beyond, this redness was in larger or smaller patches ; it extended into the primitive carotid, and had hardly diminished in intensity after a maceration of four hours. The *lungs* were free from adhesions, except some cellular ones at the right side, where there were three ounces of red serous fluid, whilst there were at least nine at the left. The lung of this side was heavy, blackish, or of a deep brown red color behind at its lower part, firm to the touch and pitting when the finger was pressed upon it. Upon incisions being made into it a small quantity of red, not frothy fluid flowed out, the vessels remaining open on the surfaces and they had not a granulated aspect. A softened tubercle, about the size of a small nut and surrounded by a small quantity of a grey substance, was found near the base and sharp edge of this lower lobe. The upper was firmer than usual, and contained a moderate quantity of pale colored fluid and much air. The right lung presented through nearly its whole extent the density of this last lobe, also a great number of blackish points behind, and in these points there was a structure analogous to that of the lower right lobe, and half of the organ was unfit for respiration.

ABDOMEN. — *Æsophagus*, healthy and covered by its epidermis throughout. *Stomach*, a little larger than usual and containing a thick reddish liquid of an acid smell. Its mucous membrane was of a bright red color, in which there were yellowish and whitish spots, and it was very much softened and thinned in its two upper thirds. In the other it had a greyish color, a mamelonated aspect, a consistence and thickness greater than natural except near the pylorus, over the space of two inches, where it was natural. The *small intestine* was larger

than usual and contained rather a large quantity of mucus and yellow bile. Its lining membrane was white and with red points in it ; was a little thickened in its first quarter ; of a good consistence in its first half, softened in the second, where there were many *elliptical patches*, which were longer and thicker according to their proximity to the cæcum. The first had grey points on their surfaces, as is so common with them in health ; the others were greyish and reddish, and had considerable thickness in the last three feet. Their appearance was undulated, as it were ; the crypts were not distinct, and the cellular membrane, corresponding to them, had a darker color and was less thick than the mucous membrane covering it. Two of these patches had a small ulcer upon them at least two lines in diameter, and that nearest the cæcum was about five inches large. The *large intestine* was very much meteorised, and was four inches and a half to five large from the cæcum to the rectum, and contained rather a large quantity of yellow, greenish, pultaceous matter. Its mucous membrane was of proper thickness and consistence, and presented some flattened lenticular crypts in the right colon. The *mesenteric glands* were enlarged, especially near the cæcum, where they were very much softened and of a deep red and bluish color. Three of them in the meso-cæcum were about the size of small nuts. The *liver* was a little larger than usual, and was adherent throughout its whole convex surface to the diaphragm. The *gall-bladder* contained a small quantity of turbid yellow fluid, not very thick. Its mucous membrane was reddish ; its usual areolated aspect was almost effaced ; its thickness was increased and long strips were easily obtained. The *spleen* was nearly three times as large as usual, of a blackish red color, very much softened and easily reduced to pulp ; the *pancreas* was red throughout ; the remainder of the organs were healthy.

This observation, in whatever light we may view it, seems to me to offer many points of interest. And to commence with that which bears upon the special object of this chapter, I would observe that the lesions of the small intestine were as slight as I ever observed in any case of the typhoid disease ; and supposing death had come on slowly and not suddenly, it would have been impossible to explain it by these lesions, and I think it could hardly be explained save by the condition of the mucous membrane of the stomach, whose softness and diminished thickness occupied so great an extent of surface ; so that this observation proves, better than most observations do, the necessity of examining with care all the organs of the body.

We cannot, moreover, doubt that the lesion of the mucous membrane of the stomach was secondary, that is, consecutive upon that of the small intestine. For the first symptoms, the diarrhœa, and soon afterwards the meteorism, indicated that the intestinal canal was the original seat of the affection, and at the autopsy the elliptical patches, nearest the cæcum, were found reddened, greyish and somewhat thickened ; the mesenteric glands, corresponding to them, were more or less enlarged, softened and of a deep red or bluish color, that is, they presented all the characteristics of patches and glands, which are passing from a somewhat inflammatory condition to a natural state ; and there was not the slightest gastric symptom before delirium came. It is moreover remarkable, that as the inflammatory condition of the elliptical patches had retrograded, so the symptoms followed an analogous course during the last days of the existence of the patient.

The meteorism which he had is well worthy of attention as much for the period at which it began, the third day of the disease, as for its duration until death, and for the condition of the large intestine which was the seat of it. It must have been

observed, in fact, in this as well as in the preceding observation, that the mucous membrane of the colon had, notwithstanding the enlargement of this large intestine, its natural thickness, and, doubtless, in consequence of a cause independent of inflammation, since the membrane had no other lesion which could be referred to it. It is, likewise, proper to remark, that if we do suppose the small intestine exerted some influence in the early period of the disease, towards the production of the meteorism, we cannot suppose this last to have been caused at that period of the disease by ulcerations, of which there were hardly any traces left at the autopsy, and which probably did not exist at that time.

Was the inflammation of the gall-bladder recent at the death of the subject? We can only suspect this to have been the fact from what we have previously stated, but we cannot affirm it because of the want of symptoms which do not permit us to affix any period, before or after which this lesion must have commenced.

It is not the same case with the morbid changes of the spleen; the pain in the left hypochondrium on the *third* day of the disease, the obscure sound of the chest on the fourth, in the part corresponding to this organ, without the respiratory murmur, or the voice having indicated any morbid change in the lungs in the same part. From these symptoms I cannot doubt of the increased size of the spleen at this period.

There is one more fact about which there may be some surprise, I refer to the rather severe lesions of the lungs, and the absence of dyspnœa on the day the death of the subject took place. I cited in a previous chapter cases in which death having taken place in a very rapid manner and under entirely unexpected circumstances, the pulmonary parenchyma presented an analogous change, but then there was during some hours,

more or less severe dyspnœa, and the lesion was not latent ; and in this case the absence of dyspnœa was the more remarkable from the fact that the condition of the lungs probably contributed much towards producing the death of the patient.

II. IN PATIENTS WHO DIED OF OTHER ACUTE DISEASES.

As I have already remarked, the patients who died of typhoid fever were not the only ones in whom death could not always be explained by reference merely to the condition of the organ primitively affected. Without including the histories I took of those who died of pneumonia, I would remark that in five out of thirty-four this was the case. It was impossible to account for the death of one of them from the lesions of any organ. In the others, the more or less serious lesions of the mucous membrane of the stomach, or of the small intestine, or of both conjoined, explain in a satisfactory manner the fatal termination.

Moreover, three of these subjects died at a very late period of disease, when already the chief lesion had retrograded, as we have seen it happen many times in the typhoid disease.

In addition to what I have previously stated I would make one remark, viz. that cases of sudden, or at least of very rapid and of very unexpected death during convalescence from slight disease, or even when apparently in a perfect state of health, and which it is impossible to account for by the condition of the organs, are not very rare ; and, therefore, far from being astonished at not being always able to explain the death of patients by the disorder of the organ primitively affected, we ought to be rather surprised that we are able to do it so often by taking into consideration other viscera ; likewise, that when the proportion of cases in which this explanation could not be made

use of should be greater than that I mentioned for the typhoid disease (two in forty-six) this fact would not form a characteristic trait of these other acute diseases.

We have never in the previous pages spoken save of the solids, but the fluids are not less often a cause of death, since their alterations during the course of acute diseases can leave no doubt upon the subject. We must, therefore, add them to the others, although in the present state of science, we cannot determine their actual value.

Another fact ought not to escape us, viz. that alterations of functions, whatever may be their cause, whether evident to the senses or not so, must be considered as relating to the present subject. Of what use is it to seek for the cause of dyspnoea, if it be sufficient to interrupt respiration for some time? May not the changes in the cerebral functions, whether the brain be altered evidently or not, in the course of this disease, explain sufficiently why death takes place under certain circumstances?*

RECAPITULATION.

HAVING entered into all the details which appeared to me to be necessary in order to the perfect knowledge of the facts, I will now attempt to give a general sketch of the disease. When thus examined, the reader will be able to seize in a better manner the general scope, character, causes and importance of the lesions I have described.

* See what is said upon this subject when treating of delirium in the second volume. — LOUIS.

1st. The *pharynx* presented one or more morbid changes in a sixth part of the cases, false membranes, a purulent effusion into the submucous cellular membrane and generally ulcerations.

2d. There was only one species of lesion in the *œsophagus*, viz. ulceration, which was found in nearly the same number of individuals as ulceration of the pharynx. They were at times few in number, at others, numerous, and nearly always they were slight.

3d. The size of the *stomach* was rarely increased. Its mucous membrane was natural in thirteen subjects; softened and thinned in bands, or in a continuous manner in nine; ulcerated in four; it was more or less mamelonated and softened in various degrees and extent, with or without change of color in the others.

4th. The *small intestine* was meteorised in fourteen cases, to a remarkable degree in two only, and there were intussusceptions from the upper to the lower extremity in three subjects. Its mucous membrane, save the elliptical patches, was white in a little less than a third part of the individuals; red over a greater or less extent of surface in seventeen; greyish in eleven; it was of a good consistence throughout its whole extent in a fifth part of the cases; more or less softened over a larger or smaller surface in the others. Brunner's glands or isolated crypts were seen somewhat enlarged near the cæcum in a quarter of the patients. In all, the *elliptical patches* were more or less altered, and their lesions were more serious according to the proximity of the patches to the cæcum, near which perforations almost always took place. The cellular membrane corresponding to the patches was, likewise, constantly diseased, so that it is impossible to decide rigorously whether the lesion began with this latter, or with the mucous membrane, or in both at the same time.

5th. The *large intestine* was meteorised in more than half the cases, and generally to a remarkable degree, and then its parietes had their natural thickness, or they became thicker than usual, as we find it to be the case in the small intestine when obstructed in strangulation, and when, consequently, it is distended with fœcal matter. Its mucous membrane was white in thirteen subjects; red over a certain extent in twenty; greyish in nine; it was of its usual consistence in a fourth part; it was softened in various degrees over a greater or less extent of surface, and was sometimes thickened in the others. Eight presented a certain number of lenticular crypts few of which were ulcerated; four had hard, small, rounded patches, similar to those of the ileum; fourteen had ulcerations which were generally few in number, superficial, and of a small size.

6th. The *lymphatic glands* were often not healthy. Those of the mesentery, corresponding to the elliptical patches of the ileum, were more or less changed, softened, thickened, reddened, &c. in all the cases; and this triple alteration presented more or less remarkable varieties at the different periods of the disease. The mesenteric glands which corresponded to the healthy elliptical patches, presented likewise the same alteration in a quarter of the patients, but in a much smaller degree. The mesocolic glands were generally affected in an analogous manner, and commonly very seriously so, but not in all the cases. The cervical glands and those of the large and small curvature of the stomach were sometimes red and thickened to the same degree as the mesenteric glands corresponding to the healthy patches. The lymphatic ganglions about the bile-ducts were very much inflamed in two cases.

7th. In all, with merely four exceptions, the *spleen* was more or less seriously changed in structure, ordinarily thickened, softened and frequently four or five times as large as

usual, and in such circumstances it was always very much softened.

8th. The *liver* was rarely of a size smaller or larger than natural. It was softened in half of the subjects, to a remarkable degree in some, and generally it then had a pale color, contained a little blood, and presented upon the surface of the incisions a dry aspect.

The *bile* was very abundant, very fluid, reddish or greenish, in the majority of the cases, and was sometimes turbid. The *gall-bladder* contained perfect pus in three subjects, and its mucous membrane was more or less red and thick in the same cases.

9th. The *kidneys* were softened and larger than natural in some individuals, and were evidently inflamed in one of them; generally they were healthy. The lining membrane of the *pelvis of the kidney* was somewhat red and thickened in two cases; that of the *bladder* in two others; and in a third there was a small ulcer near the meatus urinarius.

10th. Inflammation of the *parotids* was found in one subject only.

11th. The *heart* was healthy in a little more than half of the cases; it was more or less softened in the others, and to an extreme degree sometimes. When thus greatly softened it was of a livid red color, its parietes were thinned and very easily torn; and its cavities contained only a few drops of blood mixed with air, or the blood was clotted but not fibrinous. The reverse of this was the case in patients in whom the heart was healthy. The *aorta* had a somewhat bright red color in nearly all of the cases in which the heart was soft, and sometimes its lining membrane was softened and thicker than usual. This red color was infrequent in those cases in which the heart was healthy, and it was very slight when it did occur.

12th. The *epiglottis* was red and thickened at its edge,

and covered with a false membrane in two subjects ; it presented, in addition to this thickening, a partial destruction over a small extent of surface at its top and on the sides in a sixth part of the individuals.

13th. The *larynx* was covered by a false membrane in three cases, and on a fourth there was observed a small ulceration.

14th. The *lungs* were natural or very nearly so in a third part of the subjects ; splenified or hepatized in the others, generally over a small space, whether these two lesions were found separately or simultaneously.

15th. The *pleura* contained from three to thirty ounces of bloody serous fluid in a little less than half of the cases.

16th. The *arachnoid* was covered over a small space at the upper part of the brain by a very soft false membrane in two cases. The cortical substance of the brain was more or less of a rose or red color in seventeen ; its medullary substance was injected in the majority of the cases, ordinarily in a moderate degree. Both had it a little softened in seven subjects. There was a partial softening of limited extent and confined to the septum lucidum, or one of the thalami in two others. The *cerebellum* had the same lesions as the brain, but less frequently.

17th. Finally, the *skin* presented deep traces of phlegmonous erysipelas in four patients ; it was thickened or thinned, partially ulcerated, or completely destroyed in the places where blisters had been applied. Its destruction was still more complete on the sacrum in a great number of individuals. Except in cases of phlegmonous erysipelas the subcutaneous cellular membrane presented no alteration save in two subjects. There was an abscess below the lower jaw in one of them, and emphysema of the neck in the other.

These lesions were found more or less in all cases, were not

all of the same nature, and did not all have the same cause ; they were not equally frequent in patients who died at different periods of disease, and did not run their courses in the same period.

With respect to their nature, in some inflammation was more or less directly a cause ; in others they appeared independent of it. Among the former were those in which there were false membranes in the pharynx ; effusion of pus into the submucous cellular membrane of the pharynx, ulcerations of this organ, of the stomach and œsophagus ; the mamelonated condition of the mucous membrane of the stomach ; its softening in many cases ; its softening with diminution of thickness in some ; the more or less serious morbid changes of the elliptical patches of the ileum ; that of the mesenteric glands corresponding to the patches ; the softening of the lining membrane of the large intestine in many subjects ; its hard patches, its ulcerations ; the swelling and softening of the mesocolic glands ; redness with thickening of the mucous membrane of the gall-bladder ; thickening with redness of the pelves of the kidneys ; softening of the kidneys themselves in one case ; partial destruction of the epiglottis ; the first or second stages of inflammation of the lungs ; false membranes of the arachnoid ; finally, erysipelas and eschars upon the sacrum ; ulceration with thickening of the skin in the spots where the blisters had been applied. The changes, independent of inflammation were, the pale softening of the liver and heart ; the redness of the aorta, evidently at least, in the majority of the cases ; the softening of the mucous membranes of the stomach, of one or both intestines in a certain number of cases ; splenification of the lungs ; effusion of bloody serous fluid into the pleuræ ; the different conditions of the spleen ; general softening of the brain, the rose or red color of the cortical substance of this organ.

Some of these lesions, ulcerations of the pharynx, œsophagus and epiglottis, were not found in subjects who died between the eighth and fifteenth days of disease, and were more frequent in patients who died between the sixteenth and thirtieth days than in those who died afterwards. The other lesions were, likewise, commonly less marked in this last period than in the others, especially in the first.

Since certain lesions were less marked and less frequent in subjects who died after the thirtieth day of disease than in those who died earlier, it may be asked if this difference depends upon the fact that these lesions were always in a smaller proportion in those cases than in others, or whether they had retrograded. This question seems the more natural inasmuch as the morbid change of the elliptical patches of the ileum and those of the mesenteric glands had evidently followed a retrograde course in a great number of subjects.

Although the affirmative of this question is very probable for a certain number of cases, every fact does not, by any means, support it. For it may be said that if this lesion did really retrograde, we ought to attribute the difference of proportion of which we are now speaking to this fact, and this difference must be nothing for those lesions which leave deep traces, for example, ulcerations of the pharynx and œsophagus, partial destruction of the epiglottis, softening with diminution of thickness of the mucous membrane of the stomach. This difference is very great. Moreover, if these lesions had been the same in all the subjects, how can we conceive of death having occurred after a few days of disease in some, a considerable time in the others, when, moreover, there was not any extreme difference in the condition of the small intestine? We cannot, unless, indeed, we admit that secondary lesions are of no importance, which it is impossible for us to allow, or unless we say

that these lesions existed in the same proportion among the different subjects but in different degrees. But this last point of view is merely a supposition, and, therefore, we need not stop a moment to consider it. The most conclusive reason, it appears to me, for the opinion that these lesions do really follow a retrograde course is, on the one hand, that this retrograde course takes place in the elliptical patches of the ileum and mesenteric glands; on the other, that the greyish color of the mucous membrane of the alimentary canal was not found in subjects who died between the eighth and twentieth days of disease, but almost solely in those who died after the twenty-fifth, and this color is one of those by which organs pass from an inflamed state to a natural condition.

Of all these lesions only one was constantly found, namely, an alteration of the elliptical patches of the small intestine, to which may be added a morbid change in the mesenteric glands. I have considered it as inseparable from the disease we are now studying, and as absolutely forming its anatomical characteristic. And as it was more or less serious in some subjects who died on the eighth day of the disease; as, in the very great majority of cases the first symptoms indicated a lesion of the alimentary canal; as the changes of the small intestine were more serious than those of the colon, which was healthy in a great number of cases, I must conclude the lesion of the elliptical patches began at the commencement of the disease.

Although the other lesions must be considered as merely accessory or consecutive, still they commenced often quite soon after the principal disease. Especially was this the case with the different softenings, which were more serious in patients who died between the eighth and fifteenth days than in those who died afterwards.

The anatomical characteristic of typhoid fever becomes still

more manifest by the comparison of the lesions previously given, with those presented by individuals who died in consequence of other acute diseases. For, if we except the condition of the elliptical patches of the ileum, the ulcerations of the pharynx, of the œsophagus and epiglottis, which were not found in any of these last, the lesions were the same. There was a difference in the proportion merely of cases in which they were met and in the organs attacked, for in regard to others, the mucous membrane of the stomach and intestine, for example, this proportion differed not very sensibly in the two classes of patients. The mucous membrane of the stomach was more frequently in a natural condition after the typhoid affection than in subjects who died of any other acute diseases. And as it cannot be said that a pneumonia is a gastro-pneumonia, although there is frequently found at the autopsy of those who die of pneumonia a more or less serious alteration of the mucous membrane of the stomach, so we cannot call a typhoid affection a gastro-enterite.

But these frequent lesions of the mucous membrane of the alimentary canal and of a variety of other organs, in patients who died of acute diseases of any nature, prove that when an affection of this nature gives rise to a febrile excitement of any duration, the majority of the organs of the body become the seats of more or less serious lesions. The mucous membrane of the alimentary canal is not oftener, in fact it is less frequently diseased than some others, the spleen, for example, which was more or less seriously changed in all the cases of the typhoid affection, excepting four. This is an important law, and it may tend, as it appears to me, to simplify much the study of pathology. This is what we ought, perhaps, to have discovered, *a priori*; for what apparent cause is there more

capable of producing all kinds of lesions than a more or less severe febrile excitement, sometimes of long duration ?

Ulcerations of the pharynx and œsophagus, having occurred only in a small number of the typhoid patients and in no other disease, may be considered as among the anatomical characteristics of the former, though they are *secondary*. These are very important characteristics nevertheless, because it would be only necessary to find some ulcerations in the pharynx or œsophagus in a patient who died of an acute disease, in order to be almost sure of the nature of the disease.

As much may be said of the destruction of the epiglottis. Ulcerations of the large intestine are likewise somewhat characteristic of the typhoid disease, being much more rarely found after other acute diseases than after the typhoid affection, the former having afforded but three examples of it. Except these cases and a fourth relative to a small ulceration of the larynx in a patient who died of pneumonia, I never found ulceration in patients who died of acute disease other than the disease which we are now studying. Whence we must conclude that it differs from the others not only by its seat and the character of its lesions, but by an important peculiarity bestowed by it upon the different membranous tissues of the body which tends to produce ulceration in them. So that in this respect, *the typhoid affection is to other acute diseases what phthisis is to chronic diseases.*

The morbid changes of the spleen are, likewise, somewhat peculiar to typhoid fever, since they were observed in all the cases of this disease save four, and without exception in all those who died between the eighth and fifteenth days of disease. They were, likewise, of much less frequent occurrence in other acute diseases, for in these I have never seen them at the *maximum* of development which they arrived at in many fever

patients. There was, in fact, on this point a kind of opposition between the patients dying of typhoid fever and those who died of other acute diseases; the softening of the spleen being much more frequently connected with a small size than a large one in the latter class, whereas the case was entirely the reverse in individuals who died of the typhoid disease.

What conclusions must we now draw in relation to the doctrine of revulsion and derivation, or the possibility of destroying one inflammation by another inflammation, excited at a period more or less distant from the commencement of disease? I do not refer to pains merely which can be often relieved by exciting some new pain. How can we believe in the truth of this doctrine, when it is a law of our economy that one inflammation causes a great many secondary lesions, and generally a new inflammation? I cannot give any answer, nor raise any doubt about the truth of the doctrine, but we must wait for facts to be collected in relation to the subject, which will reconcile opposing facts, and submit to what experience may prove to be true. But, as yet, has experience really proved it? Where are the facts which prove, in an *undeniable* manner, the use of derivatives and revulsives in these cases? Have not simple coincidences been taken as effects? The reader will see in the fourth part how very probable it is that this confusion really exists, and it seems to me that if the sketch of the lesions which I have just given is not sufficient to overthrow the doctrine of derivation, it must excite in the best minds many doubts about the utility of the precepts upon which the doctrine depends, and with these doubts a desire for seeing this doctrine submitted to the test of new facts.

APPENDIX TO THE FIRST VOLUME.

BY THE TRANSLATOR.

SECTION I. — PRESCRIPTIONS.

The following prescriptions are made use of in this first volume. I obtained the explanations of them from the Manuals of Foy, Edwards et Vasseur, Nysten's Dictionary, &c.

1. Bouillon aux herbes, page 36, line 32.

R Sorrel,	}	each a handful.
Beet,		
Chervil, (Scandix Cerefolium)		
Lettuce,		
Fresh Butter,	}	aa Q. S.
Salt,		
Water,		
	}	lbs. ij.

Boil and strain. Taken in cupfuls to facilitate the action of medicines. — E. and V.

2. Camphorated Cinchona, page 103, line 3. Probably similar to the formula given by Edwards, Vasseur, and by Foy.

R Camphor, 3ij.
Cinchona, ʒj.
Water, lbs. ij. M.

3. Gum Potion, page 58, et passim. This preparation varies somewhat, but its chief ingredients are gum arabic, orange flowers, and the infusion of red poppy. A spoonful is taken every hour.

4. Limonade Muriatique, page 102, line 27.

R Hydrochloric Acid,	3 ij.
White Sugar,	Q. S.
Water,	lbs. iv. M. E. and V.

5. Orge Oxymelé, page 94, line 15, et passim. Decoction of barley with simple oxymel.

6. Orge. Sir. Tartar., page 5 and passim. Barley water with Sir. Tart. (See below, No. 11.)

7. Petit-lait Tamarindé, page 132, line 6. This might have been translated "tamarind whey." It is made according to the following receipts.

R Pulp of Tamarinda,	§ j.
Whey,	lb. i.

Boil and strain. Cupful at a time. — E. and V.

8. Petit-lait Emulsion, page 210, line 1. Whey Emulsion.

9. Riz. Sir. Tart. Page 296, line 26. Rice water with Sir. Tart. (See 6 and 11.)

10. Sweetened Polygala, page 36, line 9. Infusion of polygala sweetened with simple syrup.

11. Sirop. Tart., page 210, line 1.

R Simple Syrup lbs. ij.

Mix with the following when crystalized,

R Tartaric Acid,	3v.
Distilled Water,	3ij. M.

12. Tonic Potion, page 37, line 27, et passim. There are several tonic potions used in the Paris hospitals. They derive their importance from cinchona, angustura, cascarilla, according to the prescription of the physician.

13. Viol. ed., page 320, line 10. Sweetened decoction of violets.

SECTION II. — VERIFICATION OF THE TABLES AND OF THE REFERENCES.

I shall omit any mention of this subject until the second volume is printed, when I hope to give something more definite than circumstances at present allow of my doing.

SEC. III.—ON THE SOFTENING OF THE MUCOUS MEMBRANE OF THE STOMACH.

Louis in 1826, published a collection of memoirs upon different subjects, among which there was one upon "Softening with Destruction of the Mucous Membrane of the Stomach." He says, "it is found in a twelfth part of the patients who die, either as an idiopathic affection, or, as it most generally happens, dependent upon some chronic disease ; sometimes it is latent, but generally it is accompanied by symptoms by which it can be recognised during life."

He then proceeds to give the details of eighteen cases collected at La Charité, in the wards of M. Chomel. From these he concludes that though there is some obscurity about the affection, there is reason to think that its nature is inflammatory. For the details of Louis's general remarks upon the nature, causes, diagnosis, prognosis, &c., the reader cannot do better than consult the original Memoir.

Robert Carswell, Professor of the London University, afterwards made some curious experiments upon the effects, after death, of the gastric fluid or acid upon the coats of the stomach. These effects were, as he thought, thinning, softening, and ultimate perforation. In these researches he was led to conclude that Louis was mistaken in his opinion, that the lesions he had described were commonly pathological. Louis, in fact, did not do, when making the autopsies of these patients, what the above-mentioned Professor says ought always to be done, viz., he did not decide by means of tests whether there were any acid contents in the stomach. Professor Carswell, in 1834, published *Fasciculus V*, of his "Illustrations of the Elementary Forms of Disease," and in this number he treats of "Softening." Let us now examine his statements in relation to softening of the mucous membrane of the stomach.

He speaks of two causes of softening of the mucous membrane of the stomach, inflammation and the action of the gastric juice after death. He thinks most of the cases detailed by Louis were of this latter description. The two forms differ from each other, 1st, in the *portion of the stomach* attacked by them, the former being in the pyloric half generally of the stomach, the latter in the cul-de-sac where the contents of the stomach lie after death, unless something unusual

happens to displace the organs ; 2d, in their *color*, in the former the membrane being rather opaque although it may be red ; in the latter it being translucent, while it is never red. There are other minute but less constant differences between these two forms of softening. See "Illustrations," &c.

Let us now examine the two observations given by Louis, in which he supposes the stomach to be the cause of death (Obs. 27, 28). The description of the stomach in the former of these corresponds quite perfectly with Carswell's description of the effects of the gastric acid ; moreover, there were no gastric symptoms before death ; about the other case there is some doubt, for 1st, there was acid in the stomach, for it was discovered by its odor ; 2d, the mucous membrane of the stomach was of a bright red color. Now the former of these circumstances is in favor of the morbid appearances being a post mortem effect, the latter utterly inconsistent with it, according to Professor Carswell, who, it will be remembered, says that redness never accompanies the softening produced by gastric acid.

As the whole of this subject is interesting, and as any facts, though not unimportant in themselves, may become so when compared with others, I will mention the results of some experiments I made while in Paris. I wished to become more intimately acquainted with the mucous membrane of the stomach and intestines, and also to test this question of the influence of acid upon the alimentary canal. My original plan was as follows, viz., to examine this canal with as much minuteness as possible, in about forty or fifty cases. I meant to have divided them into four classes, each containing ten, of persons who after death had been laid upon the back, abdomen, and on either side. By this means I proposed deciding more fully the question of the effect of the acid contents of the stomach upon its membranes, because of course the contents would not always rest upon the same part of the organ. Unfortunately, after having examined ten, some difficulty arose with the superintendent of La Pitié, and I was obliged to give up my plans. The results from these ten are interesting, therefore I shall subjoin some tables. But first let me explain my mode of procedure. My custom was to remove first the stomach, retaining the contents of it by means of ligatures ; afterwards I took three pieces from each of the intestines at their commencement, middle

and terminations. The portions were from three to four inches long, and before being cut I placed two ligatures, so as to be able to examine their contents more accurately after the autopsy was finished. After having examined carefully every part of the canal that remained, I examined still more in detail the portions above described. I observed and noted at the time their form, size, &c., the color of the mucous membrane before washing. Having spread the pieces upon a table, I placed test papers upon them, noticing whether the vegetable infusion became reddened or not, and likewise the different shades of color which occurred in different parts of the canal. Having noted these appearances, I removed the contents, and attempted to raise strips of the mucous membrane.* From these examinations I was able to make several tables in relation to various questions, but they have no immediate reference to the present subject. I shall, therefore, give one table of nine cases to determine the effect of acid contents upon the alimentary canal and two others copied from it.

* It is difficult to describe the method to be followed in raising strips of mucous membrane, yet I would try to do so, for I consider it very important that every one should know how to examine in this way the mucous membrane. Some, after placing a portion of the canal upon the finger, and having cut across the mucous membrane, attempt to raise a strip of it. But this mode of procedure is faulty, inasmuch as usually the cellular membrane is involved, and a portion of it is raised with the mucous. If the reader wish to learn, let him prepare to practise upon the large intestine, for generally the membrane is much more easily raised in this part of the canal than any where else. Longer strips are likewise raised in a direction parallel with the *circular* muscular fibres than in any other direction. Passing upon the forefinger of the left hand a portion of the intestine, let him keep it firmly and smoothly extended upon the end of the finger, by means of the thumb in front, and the rest of the fingers behind. Then let a little water be passed upon the surface so as to have it perfectly clean. Let a knife, held in the other hand so that it will be nearly at right angles with the surface of the membrane, be passed very rapidly over it, so as to scrape up a small portion of it. Some seize upon this portion with the fingers and then raise it, but I usually find it more convenient to pass the blade of the knife under it, and by confining the membrane there by means of my thumb, I am less apt to disturb the cellular substance when I attempt to raise a strip, than when I use the finger and thumb merely.

Comparison of Acid Contents of the Alimentary Canal with the lengths of

Degree of reddening of the Litmus Paper.	Cal-de-Sac.	Ant. Pæc.	Post. Pæc.	Pylorus.	Duodenum.	Jejunum.	Ileum.	Cæcum.	Colon.	Rectum.
	lines.	lines.	lines.	lines.	lines.	lines.	lines.	lines.	lines.	lines.
No redness throughout the whole tube. All blue.	6	1	1	18	2	0	4	5	3 $\frac{3}{4}$	1 $\frac{1}{2}$
Do.	5 $\frac{1}{2}$	12	10 $\frac{1}{2}$	18	2 $\frac{1}{2}$	6		4	12	5
	5 $\frac{3}{5}$									
Slightly red in cal-de-sac, the other parts of tube being perfectly blue.	1 $\frac{1}{2}$	6 $\frac{1}{2}$	6 $\frac{1}{2}$	12 $\frac{1}{2}$	0	3 $\frac{1}{2}$	5 $\frac{1}{2}$	0	0	0
		6 $\frac{1}{2}$	6	16 $\frac{1}{6}$		3 $\frac{1}{6}$				
Slightly reddened, save below jejunum.	3 $\frac{1}{2}$	6	6	13	2	4 $\frac{1}{2}$	6	0	0	0
							5 $\frac{1}{6}$		3 $\frac{1}{6}$	
Do. through whole tube.	5	4 $\frac{1}{2}$	4 $\frac{1}{2}$	7 $\frac{1}{2}$	5	4	6 $\frac{1}{2}$	6 $\frac{1}{2}$	7	8
Do. through whole tube; most in small intestines.	2 $\frac{1}{2}$	4 $\frac{1}{2}$	6 $\frac{1}{2}$	15	5	4 $\frac{1}{2}$	6	4	1 $\frac{1}{2}$	4
	3 $\frac{1}{8}$	5	5 $\frac{3}{4}$	11 $\frac{1}{8}$						
Quite marked, reddening equally throughout stomach. In the intestines a bluish tint which increases to rectum, where it is blue.	1	6	6	12	0	3 $\frac{1}{2}$	4 $\frac{1}{2}$	2	6	blus. 5 $\frac{1}{2}$
										2 $\frac{3}{8}$
Quite marked red in stomach, gradual diminution of red throughout canal. But in all is some redness save in cæcum, which is blue.	3 $\frac{1}{2}$	7 $\frac{1}{2}$	5 $\frac{1}{2}$	6	0	4		blue. 4 $\frac{1}{2}$	8	2 $\frac{1}{2}$
								2 $\frac{7}{10}$		4 $\frac{1}{8}$
Quite marked, and equally in every part of stomach; then diminution of red until rectum, which is as red as pylorus.	0	4	4 $\frac{1}{2}$	2 $\frac{1}{2}$		5		7 $\frac{1}{2}$	7 $\frac{1}{2}$	very red. 3 $\frac{1}{2}$
	1 $\frac{1}{2}$	5 $\frac{1}{8}$	5 $\frac{1}{4}$	6 $\frac{1}{8}$		4 $\frac{1}{4}$	5 $\frac{1}{12}$	5	6 $\frac{1}{20}$	

strips of Mucous Membrane, raised in different parts of the same Canal.

Diseases.	Color of the Membrane.	Remarks.
Lungs not mentioned. Ulcers probably phthisical in intestines.	Thin, pale, save a little redness in cul-de-sac.	In making this table I have taken the mean length where I have raised more than one strip.
Confluent small pox. Ulcers in alimentary canal.	Thin, pale throughout.	
Phthisis marked. Numerous ulcers in small intestines.	Small intestine, pale, thin. Ulcers pale, without raised edges, except in rectum, where there was mingling of pale with dark red.	
Phthisis. Ulcers in large and small intestines.	Thin, pale throughout.	NOTE. The numbers contained between the thick black lines are the lengths of strips raised on parts perfectly blue; those between the thick black and the double lines are the lengths of strips on parts where there was little reddening of the paper; those between the double lines and the bottom of the table are those where there was great redness. The reader will perceive the mean length of these strips at the bottom of each column of each of these classes.
Hæmorrhage of the brain. Sudden death. Alimentary canal well.	Stomach, dark red. Small intestines, dark brown, large blue and red spots.	
Softening of brain. Ulcers in colon.	Pale, thin, except colon, where fine dark injection.	
Phthisis. Cavities in lungs. No ulcers in alimentary canal.	Slight red in stomach. Less in small intestines. Pale, thin, in large intestine.	
Apoplexy. No ulcers in canal.	Pale greenish, emphysematous. Cul-de-sac had a white round spot. Large intestine, pale thin, save rectum, where fine injection.	
Rapid Phthisis. No ulcers.	Stomach, dark red.	

From the foregoing table it will be perceived that the cases may be divided into three classes ; 1st, those in which no acid could be discovered, by means of the test paper, throughout the whole length of the alimentary canal. 2d. Those in which the test papers were slightly tinged throughout the canal, or only in particular spots. 3d. Those in which there were marks of much acid from the reddening of the parts. Let us now see what deductions we can make.

1st. We find on looking at the different parts of the stomach our table is in most beautiful accordance with the opinion of Carswell, in regard to the effect of acid contents upon the consistence of the mucous membrane of this organ. In fact, with a single exception, the twelve mean lengths of the strips taken from the cul-de-sac, the anterior and posterior faces of the stomach and pylorus always diminish in proportion to the reddening of the test paper, or, in other words, to the increased strength of acid in the stomach. This seems to me to be an interesting result, though it may not seem so important to others as it does to myself. In making the experiment I followed as closely as I could the noble maxim of Louis "I examined every thing with as much care as I was capable of," noted immediately my observation, "caring not at all for the result to which I might be led, knowing that I should in this way more certainly than in any other arrive at truth." I believe now most fully in the effect of acid upon the stomach, and at any autopsy I think it ought to make us wary about attributing to disease what may be merely a post mortem effect.

2d. If we look at the small intestine we find, that of the duodenum I say but little, and I have done so because my notes were not sufficiently definite upon it. Commonly it is very difficult to raise any strips at all in it on account of the close connexion between the mucous and submucous membranes, and the great number of small glands usually found there. In order to make the question relative to the effect of acid contents upon the small intestine more clear, let us look at the next table which is copied merely from table I. In this we shall have but two classes.

TABLE II.

Results of test.	Jejunum.	Ilium.	Cæcum.	Colon.	Rectum.
No acid,	$3\frac{1}{8}$	$5\frac{1}{8}$	$2\frac{1}{2}$	$3\frac{1}{8}$	$2\frac{3}{8}$
Acid,	$4\frac{1}{4}$	$5\frac{7}{12}$	5	$6\frac{1}{20}$	$4\frac{1}{2}$

Note. The numbers denote the mean lengths of the strips raised.

From this table we see that acid not merely seems not to have any effect upon the mucous membrane of this tube, but it has apparently (in the cases now before us) been connected with a more healthy state of the mucous membrane than was found in those canals in which the test paper was more reddened.

Why is there this great difference between membranes so closely united to one another, and ranked by physiologists under the same general term of mucous membrane? I think we may fairly conclude that the lining membranes of the stomach and intestine are essentially different in their susceptibilities to the action of one agent at least.

Let us go a little farther and examine if there be not something in the history of the above cases which may throw some light upon the softening observed in some of them. This point, it is true, has little reference to the object of this note, but it is interesting. Was inflammation the cause of the softening? No. For the membrane which had the least consistence was thin and pale. By reference to the following table, which is merely a copy of certain portions of Table I, we shall see that phthisis had much influence upon the large intestine.

TABLE III.

Diseases.	Jejunum.	Ileum.	Cæcum.	Colon.	Rectum.
Phthisis,	$4\frac{1}{8}$	$5\frac{1}{8}$	$2\frac{3}{8}$	$3\frac{3}{8}$	$2\frac{1}{4}$
Other diseases,	$4\frac{5}{8}$	$6\frac{1}{8}$	$4\frac{3}{4}$	$7\frac{3}{16}$	$4\frac{7}{8}$

Note. The first case in Table I is omitted, because it is doubtful in relation to the disease.

From the above table we learn that the phthisical patients had the mucous membrane of the large intestine much softer than it was in patients who died of other diseases, while at the same time we see that there was very little difference between the small intestines in the two classes we have made. Does not this fact support what I stated above in relation to the entire difference between membranes called the same, and in the minds of most readers ranked as the same? But I am much pleased at finding that the results arrived at by M. Louis in his *Researches upon Phthisis*, are exactly the same as those to which I have arrived with a comparatively few cases. He says there is little difference in regard to the consistence of the mucous membrane of the small intestine in patients dying of phthisis and of other diseases, but that softening of the large intestine is very apt to occur in phthisis. How many interesting questions arise in one's mind upon these points! But I cannot touch them in this place. I would merely remark, that we neglect very much in this country the mode of deciding upon the consistence of the mucous membranes by means of the raising of strips of them. Whilst this continues, any record which may be given of their consistence cannot be very definite.

SECTION IV. — PECULIAR TERMS.

Mamelonated. I have used this term, though no such word can be found in any English dictionary, but there is no word that will express exactly the meaning of the French "*mamelonné*," and the term I have used has been adopted by some medical writers. This is a peculiar affection, but very difficult to describe. The mucous membrane, when *mamelonated*, has somewhat the aspect of sago boiled in a quantity of milk. I once, however, saw, after death, the granulations of a blister which were very pale, and resembled very much the stomach when *mamelonated*.

Met eorism. This is a word which has been adopted of late by some medical writers. It means enlargement of either intestine by flatus, by which they become resonant on percussio.

Pisan. A drink, so called by the French, made mostly of farinaceous substances, as barley, rice, &c., boiled in water and sweetened

to the palate. The following is a very common ptisan or *tea*, as used in the Paris hospitals.

R	Tritic. Repent.	℥ i. M.
	Glycyrrhiz.	℥ i.
	Aq.	℔ ij.

Boil and strain. Taken in cupfuls.

Page 30, lines 5 and 6, "Kind of paralysis with tendency to gangrene." The word *sideration* for which this translation was made, has been used very variously by different authors. I presume it means something like what we call "moonstruck." Yet what definite idea can be attached to this term? I hope in the second volume to be able to give a more correct definition of it.

SECTION V. — ERRATA.

Page 28, line 22, for "anydalæ" read "amygdalæ."

Page 43, line 17, for "amydalæ" read "amygdalæ."

Page 93, line 25, instead of "before death" read "before entrance into the hospital."

Page 109, line 14, for "aid" read "arrive."

Page 105, line 11, for "or" read "of."

Page 118, line 25, for "ileum" read "cæcum."

Page 210, line 1, "petit. lait. emulsion, should have been translated "whey emulsion." (See prescriptions.)

Page 252, line 1, for "was" read "were."

Page 252, line 9, for "size" read "consistence."

Page 286, line 29, for "were they" read "they were."

Page 289, line 9, for "intestine" read "canal."

Page 301, line 18, for "in the cæcum" read "near the cæcum."

Page 341, line 23, after "constitutions" insert "of the atmosphere."

Page 348, line 1, for the "whole intestine" read "its whole circumference."

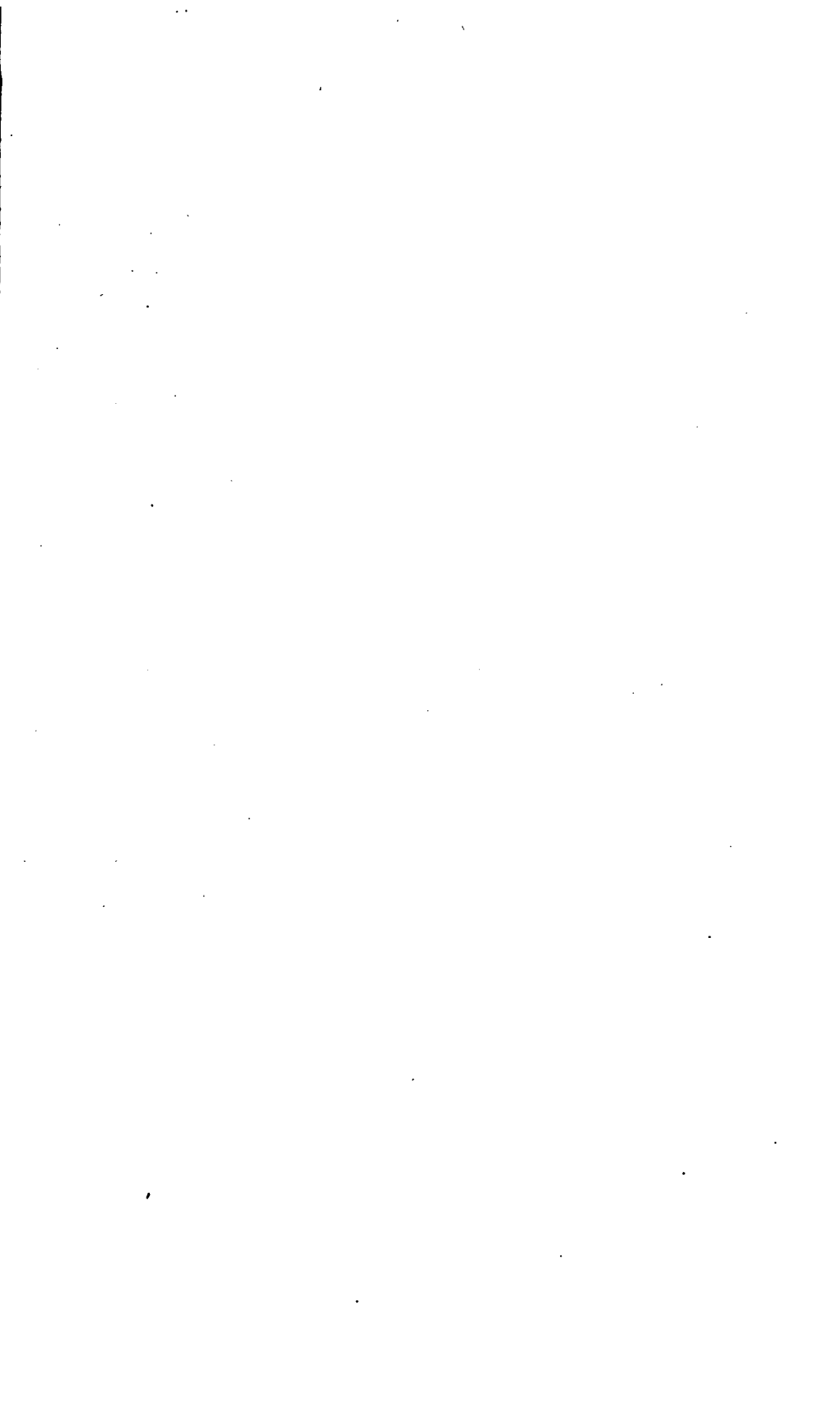
Page 359, line 26, for "℥ i." read "℥ i." This apparent error was in the original.

Page 360, line 6, for "℥ ij." read "℥ ij. See preceding note.











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